

DR. ROBERT HELEIG LIBRARI
S. M. S. Medical College.
JALPAIGURI

ADDRESS in number:

gave indefinite results.
correct
incorrect

CANCER TESTS AND TREATMENT

By P N PANTON M.B.

DIRECTOR OF THE CLINICAL AND BUREAU OF THE LONDON HOSPITAL

SOARINGLY a year passes without the outcome of some new cancer test or cancer findings have been a reputable source and widely from the straining for specificity or effectiveness just to make two types a number of such claims have the one a general test various workers in the London tests will give a history and it seems worth while to state the results of their investigations. The following are some criteria by which the particular should be judged as a practical method.

For each test investigated every have been tested and worked when possible in order to ensure accuracy of the method and in the hands of a reliable technician from the author himself has met. When special apparatus has been obtained in the test derived.

For most of the tests it has been claimed that a very high percentage of results is possible, and this has been demonstrated when the clinical diagnosis is concealed from the technician by the use of a placebo. But this precaution of misdirection may give an entirely false idea of the value of a test since it appears that there is no coordination between clinician and laborer by which the clinical diagnosis is altered in the test. The conditions insisted at the London Hospital are given in the form of the test most recently investigated, round Kaminer reaction. Many cancer tests are based upon theories concerning the nature and treatment of cancer and refer to some of these treatments. In none of these tests is not associated with a test is described.

Abderhalden

Abderhalden first described in 1912 and in the following two years papers almost all of which were confirmed in the German medical press. Originally a test for pregnancy it was later claimed as a means of diagnosing disease of any organ and particularly as a test for cancer. The test depended upon the presence of ferriprussic acid for any products abnormally present in placenta in pregnancy for breast cancer and so on. The presence of the ferriprussic acid was detected both by dialysis after mixing the substrate of the tissue with the serum in a dialyzing tube impermeable to albumin, examining the dialysate for peptone and by examining the serum films were investigated by Dr J O Gavronsky, laboratory specialist for the purpose and published in Prof Abderhalden's laboratory. The results of an investigation of 121 cases published by Gavronsky (1916). It was found that there was no specificity in these ferriprussic acid tests. In all of the patients rarely any

STUDIES IN THE

SERUM TREATMENT OF LOBAR PNEUMONIA

By G J LANGLEY M.D. FRCP
MEMBER IN GENERAL THERAPEUTIC UNIVERSITY
CHIEF VISITING PHYSICIAN ROYAL HOSPITAL

W MACKAY M.D. FRFPs Glasg
PHYSICIAN ROYAL HOSPITAL AND

L STENT M.D. Manch. Dipl. Bact.

ASSISTANT PATHOLOGIST CITY OF Salford

involved in sodium vanadate serum therapy in lobar pneumonia. Ultra violet absorption in the protody have been based on tuberculosis were also said to show a so that observations absorption curve. Dr Bendien a gladd to the accumulation of a special knowledge of aid help to form the metry was greatly handicapped by the figures in this given to his work by the lay press in Holl study of 800 cases this country. The test was investigated a period of five laboratories by Prof. J B Varrack Dr F Camph Smith, and Dr E R Holiday and in Holland with the help of Dr Bendien. The investigation was confined to the reliability of the spectrophotometric observations. It was found almost at once that the yellow solutions of protein-sodium vanadate in sodium bicarbonate rapidly faded and finally became colourless on exposure to light and that the two absorption curves obtained before and after fading corresponded respectively to the tuberculosis and the cancer curve of Bendien. The same result could be obtained from the sera of cancerous and non-cancerous subjects and a report to this effect on the investigation of 40 cases has not been contradicted in any published work (Smith, Holiday and Mack 1931). The test and a form of treatment controlled by it is still practised but the test mainly relied upon is the sodium vanadate precipitation and not the absorption curve.

Schubert Dannmeyer Test

This test was first brought to my notice by Dr A J Ormston and was investigated in these laboratories by Dr Holiday and Dr Campbell Smith after Dr Holiday had spent sufficient time in Hamburg to acquire the technique. The test was developed from the hypothesis that the lipin fraction of cancer serum is altered. Schubert claimed to be able to detect this alteration by the difference of certain electrical properties between a lipin extract of cancer serum and that from normal serum. The method consisted of preparing a suitable extract with hexane and measuring the rate of discharge of a quantity of electricity through the extract. It was claimed that in extracts from normal sera the discharge was complete whereas in cancer serum extracts a certain charge always remained residual potential. The test was examined in two series of cases and a report published in 1935 (Holiday and Smith). The authors concluded that the method as it stands seems to us to be of no clinical value as a diagnostic test for cancer.

The King Cancer Treatment

A treatment resulting from the work of Dr A C King in Kenya was investigated at the request of the British Empire Cancer Campaign. Dr King adopted the theory that extracts of certain organs injected into the blood stream might cause necrosis

DR. ROBERT HELEIG LIBRAN

S. M. S. Medical College.

JAN 1951

digest while the serum at the serum
 serum except that of cancer patients
 performance of the tests the results
 on determinations of minute amounts of
 nitrogen for which the author has devised
 apparatus since the limits of error of the
 methods exceed the minute differences found
 in disease

Working in the laboratories of Prof. D. T. Harris,
 Dr Fuchs carried out the test in two series of cases
 selected by me on the same condition as those
 prescribed for the Freund Kammer reactions. The
 first series consisted of 44 cases, and of these the
 results were correct in 25 and wrong in 19, both
 false negatives and false positives occurring. The
 series was discontinued in order that Dr Fuchs
 might control his reagents with known normal and
 cancer sera. A second short series was then begun
 and of 13 cases the test result would appear to have no
 these findings the test would appear to have no
 value, but it is proper to add that Dr Fuchs believes
 that some fault must have been present in one of
 the reagents and he proposes to repeat the test in a
 future series

Freund Tests and Treatment

Prof Freund, working now in the Pearson Insti-
 tute in Vienna, has during the last fifty years
 elaborated a theory of the causation of cancer upon
 which diagnostic tests and treatments of cancer are
 based. He believes that a substance produced
 mainly by the thymus and able to destroy cancer
 cells is present in childhood and that as age advances
 this "normal substance" diminishes. Also that
 foods rich in animal fats effect a change in the
 intestinal flora so that fats are digested and the
 stances produced which protect cancer cells from sub-
 by the normal substance. Evidence for these state-
 ments is offered in the results of the diagnostic tests
 The original Freund Kammer test was based on the
 claims that normal sera lysed some 60 per cent of
 cancer cells in suspension and sera of cancer subjects
 a smaller percentage, also that cancer sera added to
 normal sera inhibited the lytic action of the latter
 As further evidence of Freund's hypothesis it is now
 said that an abnormal coliform bacillus resistant to
 1 per cent hydrochloric acid can be isolated from
 the faeces of cancer subjects, that this bacillus grown
 in milk rich in cream produces an other extractable
 substance having antilytic properties similar to the
 the bacillus is agglutinated by the sera of cancer
 subjects but not by normal sera. A further claim,
 which appears inconsistent with recognised immuno-
 logical processes, is that this cancer protective

reasonably of carcinoma
 or of the int-
 General Hosp-
 91 per cent
 and 84.9 per
 result, suggest
 positives amo
 explained by
 cancerous case-
 chiefly for their
 adults with br
 of febrile or
 cases of pregnar
 by Miss Koi-
 and Lenz, the
 readings of the
 In all, 134
 the necessary
 and in 4 the dia-
 remain 116 case-
 Of these
 22—or approx
 51
 43
 Omitting the
 centage is 55
 Of the cancer
 6 14—or approx
 29
 15
 Omitting the
 correct and 34

Of the non-cancer cases 58 in number:
 8—or approximately 14 per cent. gave indefinite results.
 23 correct
 25 incorrect

Of the indefinite tests the percentage is 45 correct and 55 incorrect. Since each result depends upon a summing up of several tests it is difficult to assess the accuracy and the distribution of correct and incorrect results suggests that it is the outcome of chance. Certainly these tests on these findings have no diagnostic value and differ widely from the standard claimed for them. It is just to make two observations about these results: the one a general statement that very few diagnostic tests will give a 90 per cent accuracy in such conditions as were imposed here and the other on a matter peculiar to these reactions, the single result of which is derived from four or five different tests. If one or two of the tests have little value they will depress the value of the other tests and there was in this series evidence of this since the peculiar agglutination reaction considered alone in the last 68 cases of the series gave 71 per cent of correct results. Even this percentage however can scarcely be considered satisfactory.

Discussion

The problems of the early diagnosis and the treatment of cancer are so important that one cannot reject claims to solve these problems even if the theories underlying them do not seem inherently probable. There is the further reason for an impartial examination that both tests and treatments coming from a reputable source are apt to be exploited by less scrupulous persons. All the tests described in this communication some of which are of considerable antiquity are still widely used. In some cases important modifications have been made in the test and these alterations make the final assessment of the diagnostic value always open to criticism. The tests first described here those of Abderhalden are of great theoretical interest and as first described are to be entirely specific yet in spite of these constant changes were made in the technique of the changes were mainly in the direction of further complexity so that one can only conclude that the unproved claims were imperfectly controlled. A much more important underlying cause for the exaggeration of the claims for a diagnostic test in particular for the usual divorcement of the wards of a hospital staff from direct contact with tests and treatment in hospital. Clinical control of tests and treatment have been in general lacking and in some cases impossible. The view of the importance of these matters and the interest taken in them by the lay public it would most seem advisable that some official body should be responsible for assessing the value of all cancer and cancer cures as soon as they are published and with the knowledge that exploitation of ignorance and with the knowledge that exploitation was contemplated that certain of these tests were investigated here.

The examination of these diagnostic methods has involved much time and often highly technical knowledge of chemistry and physics for all of which I am indebted to my colleagues at the London Hospital.

REFERENCES

Garrison J. O. (1916) *Lancet* 1 110
 Houlden, L. L. and Smith, F. C. (1935) *Amer. J. Cancer* 23 339
 Houlden, L. L. and Murrack, J. (1931) *Lancet*

STUDIES IN THE SERUM TREATMENT OF LOBAR PNEUMONIA

By G. J. LANGLEY MD FRCP
 READER IN GENERAL THERAPEUTICS, UNIVERSITY
 CHESTER VISITING PHYSICIAN, HOPE HOSPITAL,
 W. MACRAY MD FRFPs Glag
 PHYSICIAN HOPE HOSPITAL AND
 L. STENT MD Manch Dipl Bact
 ASSISTANT PATHOLOGIST, CITY OF SALFORD

obtained
 ally the
 a por
 me cases
 required
 18 poor
 as many
 agglutina
 on the
 amount
 g in the
 rered
 ted

The published results of serum therapy in lobar pneumonia in this country have been based on comparatively small numbers so that observations on yet another modest series will add to the accumulating knowledge of the subject and help to form the basis of a critical valuation. The figures in this series have been collected from a study of 800 cases arising in the city of Salford over a period of five years. Of these cases 112 were treated with anti pneumococcus serum during the past two and a half years.

It is very difficult to obtain an estimate of the incidence and fatality rates of typed lobar pneumonia on any large scale but the fifteenth annual report of the Ministry of Health shows that 60 000 cases of pneumonia in all forms were notified in 1933-34 the fatality rate being 50 per cent. In the city of Salford with a population of 230 000 the number of cases notified in 1935 was 475 of which approximately 53 per cent died. While no accurate information can be gained from these figures it is evident that the fatality rate is high and that it is important to investigate any form of treatment which might reduce the high fatality rate of a prevalent infectious disease. In this series the fatality rate in 688 cases of lobar pneumonia of all types (not treated with serum) was 24 per cent. As analysis (into age groups) will show this figure is misleading and does not indicate the true state of affairs.

TABLE I

Total cases	Type			Group IV
	I	II	III	
800	26 (101)	5 (107)	1* (7)	24 (10)

TABLE II

	Type			Group IV
	I	II	III	
No. of cases	536	153	7	102
Deaths	63	61		20
Fatality rate per cent	0	40	100	15

The classification of lobar pneumonia according to the type of the infecting pneumococcus shows that the frequency of the serological types varies in different countries. In Britain Types I, II and III are commonly differentiated the remaining types, numbering 23 being described as belonging to Group IV. The figures given in Table I show the

ence in Hope Hospital, Salford. The average incidence of Type I pneumonia in that given for other localities in Britain, workers were the first to point out that the incidence of pneumococci varies with the type of the pneumonia problem is illustrated by the analysis of 688 cases of lobar pneumonia not treated with serum (Table II). The importance of age in prognosis has long been known to clinicians. Advancing years render the outlook more grave. The striking effect of age on fatality-rate is easily seen in Table III. It shows

TABLE III
Incidence and fatality rates, in age groups and according to Type, in 688 cases of lobar pneumonia not treated with serum

Age group	Type I		Type II		Type III		Group IV	
	Inc	Fa	Inc	Fa	Inc	Fa	Inc	Fa
16-19	14% (46)	4% (2)	15% (23)	17% (4)	—	—	18% (35)	8% (2)
20-29	29% (96)	8% (8)	22% (33)	33% (11)	—	—	23% (44)	5% (2)
30-39	26% (89)	22% (20)	19% (29)	21% (6)	—	—	19% (37)	16% (6)
40-49	17% (56)	32% (18)	23% (35)	51% (18)	43% (3)	—	21% (41)	29% (12)
50-60	15% (49)	41% (20)	22% (33)	67% (22)	47% (4)	100% (4)	18% (35)	20% (7)
16-60	100% (330)	20% (68)	100% (153)	40% (61)	100% (7)	100% (7)	100% (192)	15% (29)

In Tables I and III and the following tables the figures in parentheses denote the actual numbers of cases

that the fatality rate increases steadily with age irrespective of type and that above the age of 40 lobar pneumonia is especially fatal

From Tables I, II, and III it will be seen also that about 75 per cent of cases of lobar pneumonia belong to Types I and II, and that the fatality rate for these types over the age of 40 is much higher than 24 per cent. In this paper attention is drawn particularly to the treatment of Type I and Type II lobar pneumonia with anti pneumococcus serum

In considering the results of serum therapy in lobar pneumonia it is imperative to recognise the influence of age on fatality. For this reason the results are arranged in tabular form in age groups. Two other factors must also be remembered (a) the day on which serum treatment is commenced, and (b) the dose of serum employed. In America it is held that treatment should be begun early, if possible in the first three days. For the purpose of this investigation all patients between the ages of 16 and 60 were treated whenever their initial dose of serum could be given before the end of the third day of illness. The serum employed were Lister Institute anti pneumococcus serum Type I concentrated and serum Type II concentrated and non serum treated cases. The results (serum-treated and non serum treated cases) are set out in Table IV. The two sets of figures are comparable in that they are derived from the same case sequence, being differentiated only by the fact that the cases treated without serum were

admitted to hospital after the third day of illness. It was felt to be justifiable and scientifically sound to use as controls those cases admitted to hospital after the third day of illness for the following reason. An analysis of 457 cases of typed lobar pneumonia admitted to hospital during the three years ending

TABLE IV
Fatality rate in age groups in 112 serum treated cases compared with that of 145 cases not treated with serum

Age group	Type I						Type II					
	Without serum		With serum				Without serum		With serum			
	Inc	Fa	Inc	Fa	Exp fa		Inc	Fa	Inc	Fa	Exp fa	
16-19	14% (13)	—	15% (10)	—	—		12% (6)	—	27% (12)	8% (1)	—	
20-29	27% (26)	12% (3)	26% (18)	6% (1)	11% (2)		20% (10)	30% (3)	25% (11)	—	27% (3)	
30-39	23% (22)	27% (6)	34% (23)	—	26% (6)		18% (9)	22% (2)	23% (10)	10% (1)	20% (2)	
40-49	17% (16)	19% (3)	18% (12)	25% (3)	17% (2)		24% (12)	58% (7)	16% (7)	14% (1)	67% (4)	
50-60	19% (18)	40% (7)	7% (5)	—	40% (2)		26% (13)	54% (7)	9% (4)	25% (1)	50% (2)	

Exp fa = expected fatality. See text

Sept 30th, 1934 (before serum was used) showed that the fatality-rate was not influenced by the day of illness on admission to hospital. This is shown in Table V

The fatality-rates indicate that it is not the grave disease in patients who are admitted to hospital late in the day of illness. If clinical judgment is any guide patients admitted after the third day of illness are not necessarily more ill than those admitted earlier. Grave illness is more often than not a reason for non-removal to hospital

TABLE V

Day of illness on admission	Cases	Deaths	Fatality per cent	Day of illness on admission	Cases	Deaths	Fatality per cent
1st	30	—	—	6th	41	—	—
2nd	70	9	30.0	7th	28	10	24.4
3rd	117	21	26.6	8th	7	7	25.0
4th	88	32	27.3	9th	2	2	28.6
5th	65	27	30.6		1	1	50.0
		21	32.3				

Of the cases set out in Table IV the average day of illness on admission to hospital of serum treated cases was 2.3 days while that of cases treated without serum was 4.9 days. It will be seen that the patients treated without serum did not include a preponderant number who were admitted late in the disease. In fact no patients admitted after the ninth day of illness are included in the control series.

The general nursing care and the use of oxygen when necessary are common to both groups. On the whole the results are highly favourable to serum therapy, especially in patients below the age of 40. The figures are small and must be interpreted with reserve particularly as it has been shown that there is a preponderance of serum treated cases under the age of 40 where the fatality rate in any case is lower. Further in the age group 16-19 Type II

serum treated series the fatality rate is actually higher than in the same age group without serum. A similar unexpected finding is seen in the age-group 0-40 in the Type I series. It may be mentioned that of the three deaths in the age-group 40-49 above one case had been under treatment for pulmonary tuberculosis for seven years and tubercle bacilli were present with pneumococci in the sputum while another case at post-mortem examination was found to have renal tuberculosis. In the age-group 50-59 Type I serum treated series the only death recorded occurred in a pregnant patient with a bleeding placenta praevia. The one and only death in the age-group 16-10 Type II serum treated cases occurred in a youth of 18 with pneumonia of both lower lobes associated with slight jaundice and a daily positive blood culture. The inclusion of such cases with an already grave prognosis may explain the unexpected results when the numbers are so small.

AGGLUTININS IN LOBAR PNEUMONIA

The appearance of agglutinins in the blood-serum is recognised by some authorities as an indication of recovery while others state that their appearance does not exclude the possibility of relapse or complications. A study of this question in Salford in 84 cases of lobar pneumonia which were not treated with serum showed that agglutinins were readily recognised in the blood-serum before dying, or immediately after the crisis in all but 12 recovered cases. Failure to detect agglutinins in all recovered cases has also been noted by others^{1,2} and it has been suggested that although they are absent a protective antibody is present. It is well known that experimental immunisation does not always lead to the production of antibodies although a high degree of resistance is reached. A similar absence of agglutinins may follow an acute Sonne dysentery infection in some persons during an epidemic though in the majority agglutinins are present.

In this study of 84 cases 26 were fatal. Agglutinins were absent in 21 of these fatal cases and present in 5. The presence of agglutinins in the 5 fatal cases suggests that there might have coexisted with the pneumococcal infection some other previous pathological process which was aggravated by the superimposed acute infection. This was found to be the case in 4 of the fatal cases. There was only one in which death could be attributed to the pneumococcal infection alone.

DOSAGE OF SERUM

The regulation of the dosage of serum for therapeutic purposes by the microscopic detection of passive agglutinins in the patient's blood-serum was first used by Sabin,¹¹ and is now a routine procedure in certain New York hospitals. Some workers¹² however do not think the test reliable. In Salford it has been used in all serum treated cases. At first it was the practice to inject 20 000 units anti pneumococcus serum intravenously as an initial dose immediately the type was known but so many cases required at least one further dose that it was very soon decided to give an initial dose of 40 000 units. At night if there was delay in typing 20 000 units of each of Type I and Type II serum were given as a first dose. Thereafter further dosage was determined by the result of the agglutination reaction from day to day. This subject has been more fully dealt with elsewhere.¹³ If agglutination was absent a further dose of 40 000 homologous units was given or if the reaction was poor or moderate 20 000 units were administered. This procedure was repeated

daily until a persistent good reaction was obtained. Serum was then withheld although clinically the patient might not appear to have recovered. A persistent good reaction was obtained in some cases after 20 000 or 40 000 units but others required more. In a few patients the reaction was poor even after the injection of 160 000 units, and as many as 200 000 units have been necessary. The agglutination reaction does not appear to depend on the amount of serum administered but on the amount of excess antibody (passive or active) free in the blood serum. The average total dosage per recovered patient is shown in Table VI. It might be expected

TABLE VI

Age-group	Average total dosage per recovered patient	
	Type I	Type II
16-10	Units. 32,000	Units 35,000
0-9	49 000	60 000
30-39	58 000	8,000
40-49	87 000	56,000
50-59	80 000	55 000
16-60	60 400	56,800

that the total amount of serum per patient would increase with age because of the diminishing power to produce active antibody in older patients. The Table does not support this expectation. The cost of serum to the hospital is on an average 23 per patient—a very modest sum.

EFFECT OF SERUM

Apart from reducing the fatality rate serum therapy shortens the duration of the acute illness as is well shown in Table VII. The termination of the acute illness has been recognised as the first period of 24 hours during which the temperature does not exceed 99 F. The figures in Table VII are in

TABLE VII

Duration of the acute illness in recovered cases treated (a) with serum and (b) without serum

Age-group	With serum		Without serum	
	Type I	Type II	Type I	Type II
Average days				
16-10	5.1 (10)	6.4 (11)	8.5 (13)	6.5 (6)
20-29	5.5 (1)	5.8 (11)	8.6 (23)	7.0 (7)
30-39	6.4 (2)	1 (9)	7.7 (16)	8.3 (7)
40-49	6.5 (9)	4.6 (6)	9.6 (13)	8.4 (5)
50-59	4.8 (5)	6.0 (3)	5 (11)	7.5 (6)
16-60	5 (61)	5.5 (60)	8.3 (61)	(21)

close agreement with those reported by the Therapeutic Trials Committee of the Medical Research Council.¹⁴ It will be noticed that age does not appear to have any influence on the duration of the acute

illness. In some, crisis has been observed immediately after the first injection of serum. The importance of reducing by 2-3 days the duration of a toxic and distressing illness is obvious. Increasing discomfort is avoided and the patient's general strength conserved.

SERUM ANAPHYLAXIS

Serum reactions of a mild type were observed in 12 cases between the eighth and fifteenth day after the first dose of serum. An erythematous rash appeared in 7 cases, arthritis in 4, and in 1 case there was a feeling of general malaise. These anaphylactic symptoms lasted only from one to two days. It is not possible to incriminate any particular serum as 10 of the patients had received an initial dose of both Type I and Type II sera, one had Type I only and another Type II serum alone. Serum reactions are no more common in the treatment of lobar pneumonia than in any other disease treated with serum.

COMPLICATIONS

Table VIII is a list of the complications observed

culture positive cases than amongst the blood culture negative cases. The prognostic significance of bacteræmia is apparently the same whether the infecting pneumococcus belongs to Type I or Type II. A positive blood culture does not seem to be more common in Type I cases than in Type II cases. This tendency is not in keeping with the idea of the greater "invasiveness" of Type I pneumococci. In the groups of patients treated with serum there were 5 deaths amongst those having positive blood cultures. In all these cases bacteræmia persisted after the third day of illness. The small numbers make it impossible to come to any decision as to the effect of serum on bacteræmia. It is meantime a matter for speculation as to whether the successful use of serum by shortening the period of the acute illness prevents a bacteræmia which would arise if the acute period lasted longer.

GENERAL REMARKS

The numerous factors known to influence the fatality of lobar pneumonia require the investigation

TABLE VIII

Type I SERUM TREATED SERIES		Type II SERUM TREATED SERIES		CONTROL SERIES (NOT TREATED WITH SERUM)	
(a) 64 recovered cases	No of cases	(a) 40 recovered cases	No of cases	(a) 31 recovered cases	No of cases
Empyema	1	Empyema	1	Empyema	1
(b) 4 fatal cases	1	(b) 4 fatal cases	1	(b) 19 fatal cases	1
(i) Post mortem examination findings	1	(i) Post mortem examination findings	1	(i) Post mortem examination findings	1
Empyema	1	Empyema	1	Empyema	1
Renal tuberculosis	1	(ii) Post-mortem examination not permitted	1	Empyema and pericarditis	1
(ii) Post-mortem examination not permitted	1	Jaundice	1	Empyema pericarditis and lung abscess	1
Active pulmonary tuberculosis	1	No obvious complications	1	Empyema lung abscess and parotitis	1
Pregnancy	1			Lung abscess or gangrene	1
Bleeding placenta prævia	1			Ulcerative endocarditis (aortic valve) and meningitis	1
CONTROL SERIES (NOT TREATED WITH SERUM)		CONTROL SERIES (NOT TREATED WITH SERUM)		CONTROL SERIES (NOT TREATED WITH SERUM)	
(a) 76 recovered cases		(a) 31 recovered cases		(a) 31 recovered cases	
Empyema	1	Empyema	1	Empyema	1
Arthritis and arthritis	1	Pericarditis	1	Pericarditis	1
Arthritis and subcutaneous abscess	1			Auricular fibrillation	1
Venous (femoral) thrombosis	1			No obvious complications	1
Jaundice	1				
(b) 19 fatal cases		(b) 19 fatal cases		(b) 19 fatal cases	
(i) Post mortem examination findings		(i) Post mortem examination findings		(i) Post mortem examination findings	
Empyema		Empyema		Empyema	
Empyema and pericarditis		Gangrene of lung		Gangrene of lung	
Empyema pericarditis and lung abscess		(ii) Post mortem examination not permitted		(ii) Post mortem examination not permitted	
Empyema lung abscess and parotitis		Auricular fibrillation		Auricular fibrillation	
Lung abscess or gangrene		Empyema		Empyema	
Ulcerative endocarditis (aortic valve) and meningitis		Mitral stenosis (probably rheumatic)		Mitral stenosis (probably rheumatic)	
(ii) Post mortem examination not permitted		Diabetes mellitus		Diabetes mellitus	
Pericarditis		No obvious complications		No obvious complications	
Auricular fibrillation					

In the serum treated groups of cases complications appear to be less numerous and less varied in character than in the series treated without serum. Empyema may be present as early as the fifth day of illness.

BACTERÆMIA

At the commencement of the investigation in Salford it was the practice to take blood for culture on the day of admission and again at intervals of two to three days during the acute illness. It was soon found that any information thus obtained was not reliable. The figures set out in Tables IX and X and XI and XII have been derived from patients from whom blood for culture was taken daily during the acute illness. It must be pointed out at once that the figures are small. They are merely placed on record and a note made of the possible inferences. With increase in age bacteræmia seems to be more common and the prognosis more grave. Irrespective of age the fatality rate is always much higher amongst the blood

of a large number of cases and many epidemics. As already indicated we consider the number of cases in this study small therefore we hesitate to make dogmatic statements. Nevertheless we feel that the results obtained are very encouraging and we are convinced that serum therapy was a real help in the cases treated. Although we have no wide experience of the value of serum treatment when it is commenced later than the third day of illness, it is logical to demand for anti pneumococcus serum the same conditions as are laid down for the use of other sera. We regret the fact that a large number of patients arrive in hospital at a late stage of the illness. Many are sent in with a diagnosis of influenza pneumonia, a disease which, in Salford at least, is rare. It is recognised that the diagnosis of lobar pneumonia on the first or second day may be difficult in a few cases but by the third day the signs are usually well defined. Certain of our first- and second day cases have been accurately diagnosed on the history alone.

We follow in the footsteps of the late Dr. J. H. S. ...

BLOOD CULTURE RESULTS TYPE I PNEUMONIA

TABLE IX
Cases treated with serum

Age-group	No of cases	Blood culture		Deaths	
		+ve.	-ve	+ve	-ve
10-19	6	$\frac{2}{(33\%)}$	$\frac{4}{(66\%)}$	—	—
20-29	11	$\frac{4}{(36\%)}$	$\frac{7}{(64\%)}$	$\frac{1}{(9\%)}$	—
30-39	14	$\frac{2}{(14\%)}$	$\frac{12}{(86\%)}$	—	—
40-49	4	$\frac{1}{(25\%)}$	$\frac{3}{(75\%)}$	$\frac{1}{(100\%)}$	$\frac{1}{(33\%)}$
50-59	4	$\frac{2}{(50\%)}$	$\frac{2}{(50\%)}$	—	—
60-69	30	$\frac{10}{(33\%)}$	$\frac{20}{(66\%)}$	$\frac{2}{(20\%)}$	$\frac{1}{(3\%)}$

TABLE X

Cases treated without serum

10-19	13	$\frac{3}{(23\%)}$	$\frac{10}{(77\%)}$	$\frac{1}{(33\%)}$	—
20-29	34	$\frac{8}{(24\%)}$	$\frac{26}{(76\%)}$	$\frac{4}{(50\%)}$	$\frac{1}{(4\%)}$
30-39	20	$\frac{13}{(65\%)}$	$\frac{7}{(35\%)}$	$\frac{6}{(30\%)}$	$\frac{2}{(12\%)}$
40-49	21	$\frac{6}{(28\%)}$	$\frac{15}{(71\%)}$	$\frac{4}{(60\%)}$	$\frac{1}{(7\%)}$
50-59	20	$\frac{12}{(60\%)}$	$\frac{8}{(40\%)}$	$\frac{8}{(66\%)}$	$\frac{3}{(37\%)}$
60-69	117	$\frac{4}{(3\%)}$	$\frac{75}{(64\%)}$	$\frac{5}{(60\%)}$	$\frac{7}{(9\%)}$

BLOOD CULTURE RESULTS TYPE II PNEUMONIA

TABLE XI
Cases treated with serum

Age-group	No of cases	Blood culture		Deaths	
		+ve	-ve	+ve	-ve
10-19	11	$\frac{3}{(27\%)}$	$\frac{8}{(73\%)}$	$\frac{1}{(33\%)}$	—
20-29	5	—	$\frac{5}{(100\%)}$	—	—
30-39	6	$\frac{2}{(33\%)}$	$\frac{4}{(66\%)}$	$\frac{1}{(50\%)}$	—
40-49	5	$\frac{1}{(20\%)}$	$\frac{4}{(80\%)}$	—	—
50-59	4	$\frac{1}{(25\%)}$	$\frac{3}{(75\%)}$	$\frac{1}{(100\%)}$	—
60-69	31	$\frac{7}{(23\%)}$	$\frac{24}{(77\%)}$	$\frac{3}{(13\%)}$	—

TABLE XII

Cases treated without serum

10-19	9	$\frac{2}{(22\%)}$	$\frac{7}{(78\%)}$	$\frac{1}{(50\%)}$	—
20-29	10	$\frac{4}{(40\%)}$	$\frac{6}{(60\%)}$	$\frac{1}{(25\%)}$	—
30-39	13	$\frac{4}{(31\%)}$	$\frac{9}{(69\%)}$	$\frac{2}{(30\%)}$	$\frac{1}{(11\%)}$
40-49	13	$\frac{0}{(0\%)}$	$\frac{13}{(100\%)}$	$\frac{7}{(78\%)}$	—
50-59	13	$\frac{7}{(54\%)}$	$\frac{6}{(46\%)}$	$\frac{7}{(100\%)}$	$\frac{1}{(17\%)}$
60-69	58	$\frac{26}{(45\%)}$	$\frac{32}{(55\%)}$	$\frac{18}{(62\%)}$	$\frac{2}{(6\%)}$

We think that in the presence of some or all of the following symptoms or signs—rigor vomiting pain in the chest dyspnoea and cough—it is justifiable to administer anti pneumococcus serum early and make the diagnosis later as is often done with diphtheria antitoxin and antimeningococcal serum. A polyvalent serum should be used until the type can be determined. Seventy five per cent of our cases belonged to Types I and II. Bacteriological typing is an essential procedure. It is now both simple and rapid and in the majority of instances a correct diagnosis can be made within 30 minutes. Test sera are freely available in the open market. Typing should present no difficulty in a well-equipped hospital or municipal laboratory and in view of the serious nature of lobar pneumonia we are strongly of the opinion that local authorities should make provision for the typing of pneumococci in order to assist smaller hospitals and general practitioners. Although we have used the agglutination reaction to determine the amount of serum necessary in treatment yet we do not consider it essential in the routine clinical use of serum. It has helped to economise serum.

The use of serum in lobar pneumonia has given rise to a certain amount of destructive criticism. It seems to us that such criticism is unwise while the method is still under trial, especially as it is the only scientific means of treatment available. We maintain that many accepted lines of therapeutic intervention in serum therapy for lobar pneumonia by many workers in America and in this country would probably emerge from the ordeal somewhat discredited. There is a real danger of premature crit-

cism discouraging the further production of serum before an extensive inquiry into its use has been completed. The treatment is not difficult or trouble some. The intravenous route of serum administration is easy and painless and anaphylactic phenomena are no more frequent than in any other disease so treated. The cost of serum is by no means high.

Finally we submit that the results recorded from our study of a comparatively small number of cases encourage continued investigation into the treatment of lobar pneumonia with anti pneumococcus serum.

It is our pleasant duty to thank Dr G J Crawford pathologist to the city of Salford for much help and advice and the assistant medical officers and nursing staff of Hope Hospital for ready and cheerful co-operation. To Dr J D Giles medical superintendent Dr H Osborne medical officer of health, and the health committee we are indebted for making this work possible. And finally to Dr G F Petrie of the Lister Institute and Dr R A O'Brien of Messrs Burroughs Wellcome and Co. we offer our best thanks for supplying serum.

REFERENCES

- 1 Cooper G (quoted by Sabin)
- 2 Cowan J and others (1930) *Lancet* 2 1347
- 3 Crutchbank R (1933a) *Ibid* 1 563
- 4 — (1933b) *Ibid* 1 621
- 5 Davies D T. and others (1933a) *Ibid* 1 791
- 6 — (1933b) *Ibid* 1 49
- 7 Langley G J. and others (1936) *Quart J Med* 5 1
- 8 M O H Annual Report for 1935 (city of Salford 11 25) and Co.
- 9 Medical Research Council B part of Therapeutic Trial Committee (1934) *Lancet* 1 100
- 10 Trial of Health 15th Annual Report 1935 31
- 11 Sabin A D (1929) *J. Hyg. Camb* 46 47
- 12 Suttie W D (1928) *Proc Roy Soc Med* 21 25 222

ANCYLOSTOMA ANÆMIA

By M. MAHFOUZ FIKRI, M.B., B.Sc.,

D.T.M. & H. Lond

LECTURER IN CLINICAL PATHOLOGY IN THE UNIVERSITY,
CAIRO AND

PAUL GHALIOUNGUI, M.D., M.R.C.P. Lond

MEDICAL TUTOR IN THE UNIVERSITY

I—THE BLOOD VOLUME

In anæmia due to ancylostoma infestation the total blood volume has been stated to be increased to such an extent that although the number of red cells per cmm is greatly reduced, the total oxygen capacity of the circulating blood is normal (Boycott and Haldane 1903, Boycott 1911). In 1934 Prof. A. G. Biggam and one of us (P. G.) suggested that this finding could explain the mildness of the symptoms these patients complain of, relative to the degree of apparent anæmia, the idea being that the blood was only in some way diluted, the total oxygen bearing capacity being unimpaired.

METHOD

Before further pursuing the implication of this, we thought of confirming these results. Our method of estimating the blood volume was however a different one. It is based on the intravenous administration of congo red, a dye which is non-toxic and only slowly excreted, and is described in detail by Todd and Sanford (1931) after Keith, Rowntree, and Geraghty (1915) and Rowntree and Brown (1929). The congo-red we employed was Schering Kahlbaum's indicator (p. g. VI) which was proved to be non-toxic by intravenous injection into a dog.

The number of cases to which the method was applied was limited by the rarity of pure ancylostoma infestation. Associated helminthiasis, or dysentery, or pellagra were rigidly excluded by careful clinical, pathological and sigmoidoscopic examinations. The subjects were asked to attend the laboratory at 8.30 A.M. without breakfast and were then kept lying warm and recumbent before the actual performance of the test. The solution of the dye was prepared fresh on the day of the determination, all syringes and needles were carefully dry sterilised, and after the subject was weighed the amount of dye for injection was calculated. Blood was withdrawn from one arm into oxalated graduated centrifuge tubes to obtain the hematocrit reading and the plasma colour. The solution of the dye was then injected very slowly,

the operation taking one minute, and 3 mins exactly after the middle of this period blood was withdrawn from the other arm into another oxalated graduated centrifuge tube. Calculation of the result was done exactly as originally described.

In all, 20 cases of ancylostoma anæmia were examined. The accompanying Chart shows the results, the numbers inset in the stippled areas representing plasma volume per 100 ccm of blood. We also examined 5 normal cases to check our results and to find out the average normal for our class of patients. The results are similarly recorded in chart and compare with results of other authors. Two cases infected with ancylostoma but not anæmic were also examined. Their blood volumes were 102 and 91 ccm per kg body weight respectively—i.e. slightly higher than the anæmic cases. They were excluded from this series.

RESULTS

(1) The average total blood volume of the ancylostoma cases is 79.5 ccm. per kg of body weight—i.e., about or slightly below the normal (89 ccm.)

(2) The average plasma volume in ancylostoma anæmia is 62.6 per kg body weight—i.e., slightly higher than the normal (54 ccm.)

(3) The diminution in total blood volume in ancylostoma can be accounted for entirely by the diminution in total volume of red cells.

(4) Taken as percentage—

	Normal.	Ancylostoma
Plasma (%)	60	78.6
Red cells (%)	40	21.4

(5) The total blood volume bears no relation to the degree of anæmia as indicated by hæmoglobin percentage, but with increasing degrees of anæmia the percentage of plasma increases and the corpuscular volume diminishes.

CONCLUSION

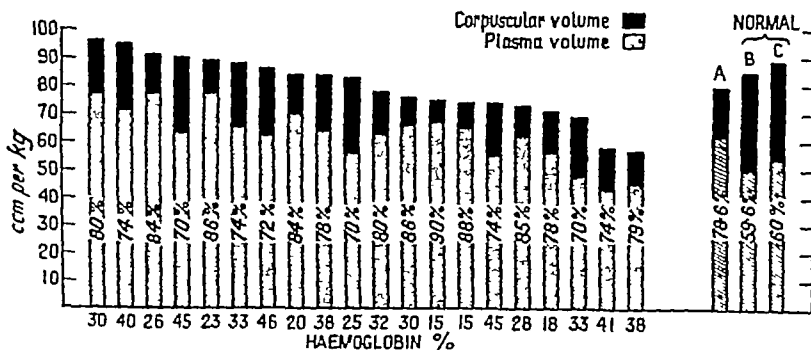
No increase in total blood volume was found in anæmia due to infestation with ancylostoma, on the contrary there may be a tendency to diminution.

II—GLUCOSE TOLERANCE CURVES

In attempts to explain the causation of ancylostoma anæmia deficient intestinal absorption has been postulated as one of the contributory factors. Many authors hold different views, regarding hæmorrhage or a possible toxic factor as being the most important cause. In the absence of any balance experiments

deficiency of absorption would be difficult to prove, and owing to the difficult and unrepeatable character of these help in the interpretation of these results, we thought logical to approach the problem in a different way—by investigating the sera of infected subjects and patients.

The patients were all of pure ancylostoma infestation, those harbouring other intestinal parasites or suffering from dysentery, diarrhoea, or fever, being rigidly excluded. This explains why we could investigate only 18 cases in three years.



The blood volume in 20 cases of ancylostoma anæmia. The upright columns indicate the volume in ccm per kg of body weight. The figures in the stippled areas show the proportion of plasma—i.e. ccm per 100 ccm of blood. A = average of the 20 cases B = recognised normal (other authors) C = average of 5 normal subjects

Before the actual test the subjects were kept on the standard hospital diet for about a week, and then first thing in the morning 15 grammes of glucose per kilogramme of body weight was given in 300 c.c. of water. The venous blood-sugar was estimated by Folin and Wu's colorimetric method before the patient drank the glucose solution and then every quarter of an hour subsequently in the first few cases. Later it was considered that fifteen minute intervals for the first hour and then half hourly intervals were satisfactory. From a long experience we know that the average glucose tolerance curve of our class of patient does not differ materially from accepted standards. In the evaluation of the results we classified them as follows —

Normal curves: blood-sugar rising 40 mg. per 100 c.c. or more above fasting level reaching a maximum in less than an hour and falling to less than 20 mg. above fasting level in 2 hours.

Low curves: maximum rise never reaching 40 mg. per 100 c.c. above fasting level.

Delayed rise: continuing to rise longer than 45 min.

Delayed fall: after 2 hours still 20 mg. or more above fasting level.

The actual figures are shown in the Table

Case no	Remarks.	Fasting blood-sugar	Blood-sugar estimations.										Maximum rise above fasting level	Rise after hours
			Time (hours)											
			1/4	1/2	1	1 1/4	1 1/2	2	2 1/4	2 1/2	3	Degree		
1		105	102	105	108	143	110	117	111	103		33	1	+12
2		82	95	112	136	132	126	116				51	1	+73
3		90	—	108	—	110	124	103				34	1 1/2	+13
4		95	107	114	127	108	116	111	98	92	28	2	1	+10
5		95	101	119	127	129	118	114				34	1	+19
6	P +	80	92	108	117	112	110	105	100			37	1	+28
7		93	93	98	108	139	111	96	85	82	37	1	+3	
8	P +	101	109	113	111	114	126	106				5	1 1/2	+6
9		85	98	108	114	126	118	113				51	1	+2
10	Iv	80	154	125	100	92	86							
11		82	80	82	91	92	106	95	105	90	24	1 1/2	-13	
12	P +	80	125	125	137	132	110	85	80		42	1	+11	
13	P +	90	—	138	—	105	—	90			15	1	+3	
14	Iv	87	143	109	80	78	82							
15		100	95	137	151	151	95	86			51	1	-14	
16	Iv	97	174	153	104	90	85	80						
17		102	—	146	—	137	123	113			43	1	+13	
18	Iv	95	111	137	123	125	100	88			42	1	-7	
19		95	182	123	11	98	81	105						
20	Iv	10	111	117	125	146	120	118			14	1	+10	
21		87	208	111	82	80	86							
22	Iv	10	14	123	152	134	110	95			54	1	-10	
23		99	22	160	150	10	84							
24	Iv	87	92	88	116	112	14	156			69	3	+69	
25		91	1212	102	130	105	80	81						

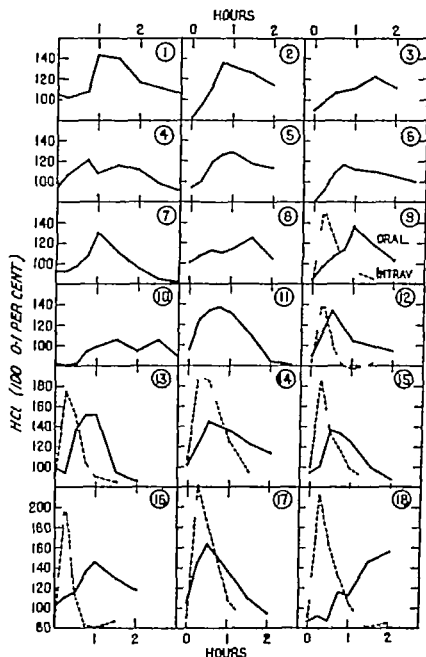
Figures in Italics show the maximum rise in each case
+ Figures considered abnormal are given in Italics

P + = Enlarged parotid, a frequent feature in anæmia in Egypt
Iv = Glucose administered intravenously

RESULTS

Curves were normal in 6 cases. 8 showed a low curve, 4 a delayed fall and 9 a delayed rise.

These abnormalities were usually present together only 3 cases showing any one of them as an isolated feature.



Glucose-tolerance curves in 18 cases of ancylostoma anemia. Cases 9 and 12-18 show curves also after intravenous injection of glucose.

The 18 cases may be divided as follows —

Normal	6
Low curve + delayed rise	6
Low curve + delayed fall	1
Delayed rise + delayed fall	1
Low curve	1
Delayed rise	1
Delayed fall	1
Total	18

GLUCOSE TOLERANCE AFTER INTRAVENOUS INJECTION

In 8 of the 18 cases the curves were also determined after intravenous injection of $\frac{1}{2}$ g. of glucose per kg. of body weight. In only one was the blood-sugar appreciably higher than fasting level an hour after injection (Case 14) while many of them showed an obvious contrast between the oral and intravenous curves (see Chart). No difference could be made out with this method between cases whose oral glucose curves were markedly different. The 8 curves may be considered normal.

DISCUSSION

Low glucose tolerance curves have been found in sprue and coline disease (Thayson 1926 1929 1932 and Bennett, Hunter and Vaughan 1932). Various explanations have been offered such as deficient absorption or excessive storage of sugar. Recently Himmsworth (1931) made the interesting suggestion that these curves could be compared to the response of subjects previously kept on diets containing large amounts of carbohydrate. patient

not absorbing fat being on virtually high carbohydrate diets. We were therefore careful to keep all our patients on a mixed diet for one week before the actual tests. Besides, in some of our cases the only abnormality was not the absence or the slight extent of any rise in blood sugar but rather its delayed character. This would make us attribute these abnormalities to delayed absorption rather than excessive or too rapid utilisation.

The present paper is only of the nature of a preliminary note and we are not in a position to draw any definite conclusions at the present stage of our work which we intend to pursue further.

SUMMARY

The glucose tolerance of 18 cases of pure ancylostoma infestation has been investigated. In 12 there was some abnormality in the extent of the hyperglycaemic response, its duration or its fall. In 9 of these two or more defects were associated.

The blood sugar curves after intravenous injection of glucose were determined in 8 cases. They were normal and did not correspond to the respective oral responses.

Interference with absorption caused in some way by the presence of the ancylostoma worms and by their bites in the duodenum is surmised as an explanation.

We wish to acknowledge our gratitude to Prof M Omar Bey for his help and advice, and to Prof A Ismail Pacha and Dr M Ibrahim for permission to investigate patients under their care and for their constant encouragement and criticism.

REFERENCES

I

- Boycott A E (1911) *Lancet* 1 720
 — and Haldane J S (1903) *J Hyg, Camb* 3 111
 Biggam, A G and Ghaloungui P (1934) *Lancet* 2 209
 Keith N M, Rowntree L G and Geraghty, J T (1915) *Arch Intern Med* 16 547
 Rowntree, L G and Brown G E (1929) *The Volume of the Blood and Plasma in Health and Disease* Philadelphia p 210
 Todd, J O, and Sanford A H (1931) *Clinical Diagnosis by Laboratory Methods* 7th ed. p 374

II

- Bennett T I, Hunter, D, and Vaughan J M (1932) *Quart J Med* 1 693
 Himsworth H P (1934) *Lancet* 2, 845
 — (1934) *Brit med J* 2 57
 Thaysen T E H (1926) *Acta med scand* 64 292
 — (1929) *Lancet* 1, 1086
 — (1932) *A Study in Idiopathic Steatorrhoea*, Copenhagen

LABOUR COMPLICATED BY THROMBOSIS OF THE MESENTERY

RESECTION OF TEN FEET OF SMALL BOWEL—PATIENT ALIVE AND IN GOOD HEALTH TWENTY-FOUR YEARS LATER

By G GREY TURNER, MS Durb, FRCS Eng
 PROFESSOR OF SURGERY IN THE UNIVERSITY OF LONDON

At a pathological evening at the Medical Society of London held on Jan 11th last, I exhibited a specimen consisting of 10 ft 3 in of the ileum showing the characteristic effects following thrombosis of the mesentery (see Figure). This portion of intestine was excised during the progress of full time labour and the following are the circumstances of the case.

The patient first came under my observation in April, 1910, when I was called into consultation by Dr James Hudson of Newcastle upon Tyne. She was then an unmarried woman, aged 22, who had the misfortune to suffer from a ruptured gastric ulcer following a definite history of stomach illness of 3 years' duration. The operation took place 9 hours after the onset. On exploration

a large perforation was found about the centre of the lesser curve on its anterior aspect. The surrounding area of the stomach wall was much indurated, but the perforation was partly covered by a neighbouring piece of omentum. There was a considerable quantity of dirty looking peritoneal exudate, but this was largely limited to the neighbourhood of the stomach and to the pelvis, the area of the small intestine being free. After closure of the ulcer the peritoneal cavity was thoroughly irrigated, a Keith's glass drainage tube being temporarily inserted into the pelvis through a small suprapubic incision. As a final step, posterior gastro-enterostomy was carried out.

The patient made an uninterrupted recovery and left the private hospital a fortnight after the operation. She continued to make satisfactory progress, and about



The resected portion of small intestine

a year later married and in due course became pregnant. During the early days she was a good deal troubled with sickness, but that soon passed off and in the later stage she enjoyed excellent health.

On a Sunday morning in February of 1913 labour commenced. She was seen by Dr Hudson who in view of the previous history, very carefully examined the abdomen but found everything in perfect order. It was noted that the pulse rate was 72, with a good volume. He left the house with orders that he was to be sent for when necessary. As nothing was heard of the patient during the day, he thought it wise to look in about 9 p.m. and was then surprised to find her looking white and ill with a very quick pulse. He obtained the history that the father had gone up to the bedroom an hour previously and had been rather alarmed because he noticed that when he gave his daughter a good night kiss her face was cold. On examination the uterus was found to be unusually tender and thus, together with the general condition, suggested that there might be some concealed accidental hemorrhage. The pains had ceased. There was no external hemorrhage and the os was only dilated to the size of half a crown. In view of the grave condition Prof Ranken Lyle was called in consultation. After consideration it was concluded that there was probably no accidental hemorrhage but that some intra-abdominal condition was complicating the labour. On further inquiry it was ascertained that the bowels had moved about 5 p.m. and that the motion was normal, but a second evacuation an hour later contained a little blood.

I was asked to see the patient about 1 o'clock the following morning. She then looked exceedingly ill with very blanched lips. The pulse rate was 140, with a very low tension, and there was so much difficulty in breathing that she had to be propped up in bed. The abdomen was distended and tender all over. By this time it looked like a case of severe intra-abdominal hemorrhage, and I could only conclude that the contractions of the uterus had probably torn some very vascular omental adhesions which had resulted from the previous peritoneal inflammation.

tion associated with the ruptured ulcer. The possible significance of the blood in the evacuation was not then appreciated. It was decided to operate at once and arrangements were soon made in the patient's own house.

With Dr Hudson giving the anæsthetic and Prof. Lyle assisting an incision was made from the umbilicus to the pubes. As soon as the peritoneum was opened, blood-stained fluid escaped, and a great mass of deeply congested almost black intestine could be seen in the upper part of the abdominal cavity on the right side. It was impossible to explore the abdomen properly on account of the presence of the uterus and furthermore it was deemed absolutely essential that the latter should be emptied. Cesarean section was therefore performed and a full time perfectly developed but recently dead child was delivered. The incision happened to be through the placenta but there was no excessive bleeding. The uterus was closed with catgut sutures. It was then found that many feet of the lower ileum presented the appearance characteristic of thrombosis of the mesentery. The gut appeared to be absolutely beyond the hope of recovery and therefore resection was carried out the upper part of the small intestine being anastomosed to the cæcum by the lateral method with direct suture. At the conclusion of the operation it was found that the uterus was contracting satisfactorily. A pint of saline was left in the abdomen and the incision was closed with through-and-through silk-worm-gut sutures. During the course of the operation saline was infused under both breasts by the nurse.

The patient stood the operation perfectly well and was really in better condition at the end than at the beginning. The whole proceeding occupied about 1½ hours.

The removed intestine presents the usual conditions found in thrombosis of the mesentery with nothing to give a hint as to ætiology.

During convalescence she ran a temperature as high as 102° F for several days, and at 101° F for about a fortnight. During all this time the pulse was correspondingly quick. At the end of a week from the date of the operation an abscess appeared where saline had been infused beneath the left breast and was opened—it contained gas and was evidently due to *Bacillus coli*. About the third day the lochia were noted to be malodorous; this persisted for a fortnight when a slough was discharged per vaginam after which the lochia gradually became normal. It was thought that probably the uterus had also become infected by the *B. coli* during the operation. It was about three months before the pulse fell to normal but all through convalescence the patient took her food well and eventually made a complete recovery.

For two or three years the bowels were relaxed and usually moved twice daily but there was little inconvenience and she gained weight though she had to be careful with her diet. Within two years she became pregnant again and was delivered of a splendid child 2 years and 8 months after the operation. A year later there was a miscarriage but there have been no further pregnancies and she continues to enjoy excellent health now 24 years since the intestinal resection.

Throughout these years the patient has been so well that she could never be persuaded to submit to any sort of investigation and one can only judge from her general appearance of well being and from the response which she makes to her environment that the economy of the body remains undisturbed.

Just after the conclusion of the case I sent the notes to Dr Hudson who had charge of the patient. His reply is so interesting a commentary on case recording that it is worth quoting—

Dear Mr TURNER,—I have made some additions to your report but no corrections. It is the proper surgical thing to add nothing or subtract nothing from a report making it a bald statement of facts, so when I read your report it was with difficulty I recognised what was an intensely exciting night of it. Why bless my soul, we had a taxi on the run for six hours! Hoping you are well

I remain yours truly

JAMES HUDSON

Abdominal emergencies during pregnancy are rare and in my own experience have been limited to several cases of appendicitis gall-stones and torsion of the pedicle of an ovarian dermoid. During labour they are presumably extremely rare and the example which is here recorded is the only one with which I am familiar.

THE CLINICAL DIAGNOSIS OF POLYARTERITIS NODOSA

WITH A REPORT OF FOUR RECENT CASES

By A W D LEISHMAN B.M. Oxon M.R.C.P. Lond

CHIEF ASSISTANT TO A MEDICAL UNIT ST BARTHOLOMEW'S HOSPITAL, LONDON

Polyarteritis nodosa is a rare disease Oscar Klotz (1917), a pathologist particularly interested in arterial disease states that he performed at least 3000 post-mortem examinations before meeting with a case. In all during the seventy years of its recognised existence about 200 cases have been reported. During the last three years four patients with this disease have been admitted to St Bartholomew's Hospital. In none of these was the diagnosis made during life though in the light of previous experience it was in the last case considered a possibility.

That the problems set by this peculiar disease are intriguing is shown by the number of publications on the subject but in the main it is the pathologist who has claimed it and though all authors agree upon the difficulties and frequent impossibility of clinical diagnosis, surprisingly few have attempted to simplify the clinician's task. It seemed therefore justifiable while giving an account of these recent cases to attempt an analytical clinical survey with a reynthesis which might serve as a foundation for the clinical diagnosis of the condition.

HISTORICAL NOTE

Rokitansky is credited with the first description of the pathological condition given in 1852 but the name of Kussmaul is commonly linked with the disease since he was the first to assign a clinical syndrome to the morbid changes. In 1860 he gave with Mier an account of two cases of a hitherto undescribed peculiar disease of the arteries which is accompanied by Bright's disease and a rapidly progressive general paralysis of the muscles. This he called periarteritis nodosa the name which still persists though Dickson in 1907 suggested the substitution of polyarteritis as being more strictly accurate.

For many years the disease was unrecognised outside Germany and Morley Fletcher is the first English name connected with it. Describing in 1892 what was probably the sixth case he gave an account of a careful study of the microscopic changes and suggested the name arteritis nodo proliferans. The early reports were usually of single cases and concerned mainly with pathology and it was not until 1914 that the first general survey was made by Lamb. He analysed the 35 published cases of polyarteritis nodosa but it is discouraging to the clinician to note his conclusion that saving the presence of typical skin nodules diagnosis during life is impossible.

In 1921 P. Meyer briefly discussed the points of diagnostic value obtained from a review of 20 cases but the monumental work of Grüber in 1926 was

not absorbing fat being on virtually high carbohydrate diets. We were therefore careful to keep all our patients on a mixed diet for one week before the actual tests. Besides, in some of our cases the only abnormality was not the absence or the slight extent of any rise in blood sugar but rather its delayed character. This would make us attribute these abnormalities to delayed absorption rather than excessive or too rapid utilisation.

The present paper is only of the nature of a preliminary note and we are not in a position to draw any definite conclusions at the present stage of our work which we intend to pursue further.

SUMMARY

The glucose tolerance of 18 cases of pure ancylostoma infestation has been investigated. In 12 there was some abnormality in the extent of the hyperglycaemic response, its duration or its fall. In 9 of these two or more defects were associated.

The blood sugar curves after intravenous injection of glucose were determined in 8 cases. They were normal and did not correspond to the respective oral responses.

Interference with absorption caused in some way by the presence of the ancylostoma worms and by their bites in the duodenum is surmised as an explanation.

We wish to acknowledge our gratitude to Prof M Omar Bey for his help and advice, and to Prof A Ismail Pacha and Dr M Ibrahim for permission to investigate patients under their care and for their constant encouragement and criticism.

REFERENCES

I

- Boycott A F (1911) *Lancet* 1 720
 — and Haldane J S (1903) *J Hyg, Camb* 3 111
 Bheram, A G and Ghalioungul, P (1934) *Lancet* 2, 299
 Keith, N M Rowntree L G and Geraghty, J T (1915) *Arch intern Med* 16 547
 Rowntree L G and Brown G E (1929) *The Volume of the Blood and Plasma in Health and Disease*, Philadelphia p 219
 Todd J C and Sanford, A H (1931) *Clinical Diagnosis by Laboratory Methods* 7th ed. p 374

II

- Bennett T I, Hunter D, and Vaughan J M (1932) *Quart J Med* 1 693
 Hinsworth H P (1934) *Lancet* 2 845
 — (1934) *Brit med J* 2 67
 Thaysen T E H (1926) *Acta med scand* 64 202
 — (1929) *Lancet*, 1 1086
 — (1932) *A Study in Idiopathic Steatorrhea*, Copenhagen

LABOUR COMPLICATED BY THROMBOSIS OF THE MESENTERY

RESECTION OF TEN FEET OF SMALL BOWEL—PATIENT ALIVE AND IN GOOD HEALTH TWENTY FOUR YEARS LATER

By G GRAY TURNER, M.S. Durh., F.R.C.S. Eng.
 PROFESSOR OF SURGERY IN THE UNIVERSITY OF LONDON

At a pathological evening at the Medical Society of London held on Jan 11th last, I exhibited a specimen consisting of 10 ft 3 in. of the ileum showing the characteristic effects following thrombosis of the mesentery (see Figure). This portion of intestine was excised during the progress of full time labour and the following are the circumstances of the case.

The patient first came under my observation in April, 1910, when I was called into consultation by Dr James Hudson of Newcastle-upon-Tyne. She was then an unmarried woman, aged 22 who had the misfortune to suffer from a ruptured gastric ulcer following a definite history of stomach illness of 3 years' duration. The operation took place 9 hours after the onset. On explora-

tion a large perforation was found about the centre of the lesser curve on its anterior aspect. The surrounding area of the stomach wall was much indurated, but the perforation was partly covered by a neighbouring piece of omentum. There was a considerable quantity of dirty looking peritoneal exudate, but this was largely limited to the neighbourhood of the stomach and to the pelvis, the area of the small intestine being free. After closure of the ulcer the peritoneal cavity was thoroughly irrigated, a Keith's glass drainage tube being temporarily inserted into the pelvis through a small suprapubic incision. As a final step, posterior gastro-enterostomy was carried out.

The patient made an uninterrupted recovery and left the private hospital a fortnight after the operation. She continued to make satisfactory progress, and about



The resected portion of small intestine

a year later married and in due course became pregnant. During the early days she was a good deal troubled with sickness, but that soon passed off and in the later stages she enjoyed excellent health.

On a Sunday morning in February of 1913 labour commenced. She was seen by Dr Hudson who in view of the previous history, very carefully examined the abdomen but found everything in perfect order. It was noted that the pulse rate was 72, with a good volume. He left the house with orders that he was to be sent for when necessary. As nothing was heard of the patient during the day, he thought it wise to look in about 9 p.m. and was then surprised to find her looking white and ill with a very quick pulse. He obtained the history that the father had gone up to the bedroom an hour previously and had been rather alarmed because he noticed that when he gave his daughter a good night kiss her face was cold. On examination the uterus was found to be unusually tender and this, together with the general condition, suggested that there might be some concealed accidental hemorrhage. The pains had ceased. There was no external hemorrhage and the os was only dilated to the size of half a crown. In view of the grave condition Prof Ranken Lyle was called in consultation. After consideration it was concluded that there was probably no accidental hemorrhage but that some intra-abdominal condition was complicating the labour. On further inquiry it was ascertained that the bowels had moved about 5 p.m., and that the motion was normal but a second evacuation an hour later contained a little blood.

I was asked to see the patient about 1 o'clock the following morning. She then looked exceedingly ill with very blanched lips. The pulse rate was 140, with a very low tension, and there was so much difficulty in breathing that she had to be propped up in bed. The abdomen was distended and tender all over. By this time it looked like a case of severe intra-abdominal hemorrhage, and I could only conclude that the contractions of the uterus had probably torn some very vascular omental adhesion which had resulted from the previous peritoneal inflamma-

tion associated with the ruptured ulcer. The possible significance of the blood in the evacuation was not then appreciated. It was decided to operate at once and arrangements were soon made in the patient's own house.

With Dr Hudson giving the anæsthetic and Prof Lyle assisting an incision was made from the umbilicus to the pubes. As soon as the peritoneum was opened blood stained fluid escaped and a great mass of deeply congested, almost black intestine could be seen in the upper part of the abdominal cavity on the right side. It was impossible to explore the abdomen properly on account of the presence of the uterus and furthermore it was deemed absolutely essential that the latter should be emptied. Caesarean section was therefore performed and a full-time perfectly developed but recently dead child was delivered. The incision happened to be through the placenta, but there was no excessive bleeding. The uterus was closed with catgut sutures. It was then found that many feet of the lower lumen presented the appearance characteristic of thrombosis of the mesentery. The gut appeared to be absolutely beyond the hope of recovery and therefore resection was carried out the upper part of the small intestine being anastomosed to the cæcum by the lateral method with direct suture. At the conclusion of the operation it was found that the uterus was contracting satisfactorily. A pint of saline was left in the abdomen and the incision was closed with through-and-through silk-worm gut sutures. During the course of the operation saline was infused under both breasts by the nurse.

The patient stood the operation perfectly well and was really in better condition at the end than at the beginning. The whole proceeding occupied about 1½ hours.

The removed intestine presents the usual conditions found in thrombosis of the mesentery with nothing to give a hint as to ætiology.

During convalescence she ran a temperature as high as 102° F for several days, and at 101° F for about a fortnight. During all this time the pulse was correspondingly quick. At the end of a week from the date of the operation an abscess appeared where saline had been infused beneath the left breast and was opened—it contained gas and was evidently due to *Bacillus coli*. About the third day the lochia were noted to be malodorous; this persisted for a fortnight when a slough was discharged per vaginam after which the lochia gradually became normal. It was thought that probably the uterus had also become infected by the *B. coli* during the operation. It was about three months before the pulse fell to normal, but all through convalescence the patient took her food well and eventually made a complete recovery.

For two or three years the bowels were relaxed and usually moved twice daily but there was little inconvenience and she gained weight though she had to be careful with her diet. Within two years she became pregnant again and was delivered of a splendid child 2 years and 8 months after the operation. A year later there was a miscarriage but there have been no further pregnancies and she continues to enjoy excellent health now 24 years since the intestinal resection.

Throughout these years the patient has been so well that she could never be persuaded to submit to any sort of investigation and one can only judge from her general appearance of well being and from the response which she makes to her environment that the economy of the body remains undisturbed.

Just after the conclusion of the case I sent the notes to Dr Hudson who had charge of the patient. His reply is so interesting a commentary on case recording that it is worth quoting—

Dear Mr TURNER—I have made some additions to your report but no corrections. It is the proper surgical thing to add nothing or subtract nothing from a report making it a bald statement of facts, so when I read your report it was with difficulty I recognised what was an intensely exciting night of it. Why bless my soul we had a taxi on the run for six hours! Hoping you are well.

I remain yours truly,

JAMES HUDSON

Abdominal emergencies during pregnancy are rare and in my own experience have been limited to several cases of appendicitis, gall-stones and torsion of the pedicle of an ovarian dermoid. During labour they are presumably extremely rare and the example which is here recorded is the only one with which I am familiar.

THE CLINICAL DIAGNOSIS OF POLYARTERITIS NODOSA

WITH A REPORT OF FOUR RECENT CASES

By A W D LEISHMAN B.M. Oxon M.R.C.P. Lond

CHIEF ASSISTANT TO A MEDICAL UNIT, ST BARTHOLOMEW'S HOSPITAL, LONDON

Polyarteritis nodosa is a rare disease. Oscar Klotz (1917) a pathologist particularly interested in arterial disease states that he performed at least 3000 post-mortem examinations before meeting with a case. In all, during the seventy years of its recognised existence about 200 cases have been reported. During the last three years four patients with this disease have been admitted to St Bartholomew's Hospital. In none of these was the diagnosis made during life though in the light of previous experience it was in the last case considered a possibility.

That the problems set by this peculiar disease are intriguing is shown by the number of publications on the subject but in the main it is the pathologist who has claimed it and though all authors agree upon the difficulties and frequent impossibility of clinical diagnosis, surprisingly few have attempted to simplify the clinician's task. It seemed therefore justifiable while giving an account of these recent cases to attempt an analytical clinical survey with a resynthesis which might serve as a foundation for the clinical diagnosis of the condition.

HISTORICAL NOTE

Rokitansky is credited with the first description of the pathological condition given in 1852 but the name of Kussmaul is commonly linked with the disease since he was the first to assign a clinical syndrome to the morbid changes. In 1866 he gave with Maier an account of two cases of a hitherto undescribed peculiar disease of the arteries which is accompanied by Bright's disease and a rapidly progressive general paralysis of the muscles. This he called *periarteritis nodosa* the name which still persists, though Dickson in 1907 suggested the substitution of *polyarteritis* as being more strictly accurate.

For many years the disease was unrecognized outside Germany and Morley Fletcher is the first English name connected with it. Describing in 1892 what was probably the sixth case he gave an account of a careful study of the microscopic changes and suggested the name *arteritis nodosa proliferans*. The early reports were usually of single cases and concerned mainly with pathology and it was not until 1914 that the first general survey was made by Lamb. He analysed the 38 published cases of *polyarteritis nodosa* but it is discouraging to the clinician to note his conclusion that saving the presence of typical skin nodules diagnosis during life is impossible.

In 1921 P. Meyer briefly discussed the points of diagnostic value obtained from a review of 20 cases but the monumental work of Gräber in 1926 was

based on 113 cases, though from inadequate description many of these are of little value

Since then, from the clinical point of view, reviews by Strong (1928) and Curtiss and Coffey (1929) are outstanding. Between them these authors collected and analysed a further 38 cases published in English, while a French paper by Cathala (1929) is noteworthy as being one of the few direct attacks upon the problems of clinical diagnosis.

PATHOLOGY

Though the pathology of the disease is outside the scope of this article, in brief it may be said that polyarteritis nodosa affects the small and medium sized arteries—in order of frequency those of the kidneys, heart, liver, the alimentary tract, mesentery, skeletal muscles, pancreas, peripheral nerves, and the brain.

Microscopically, whitish grey coloured nodules of varying size are seen upon the affected artery. Not infrequently aneurysms are formed and may rupture. The vessels tend to thrombose and the organ supplied is consequently often the site of numerous infarcts.

Microscopically it seems, although it is not universally accepted, that the earliest change is in the adventitia where great aggregation of polymorphonuclear cells together with eosinophils and monocytes is seen. The media undergo necrosis, the internal elastica lamina ruptures, and there is much proliferation of the intima. Thrombosis occurs but in healed lesions the thrombus may be recanalised. Other changes in the body are entirely secondary to the arterial disease.

ÆTIOLOGY

The cause of the disease is still unknown. For many years syphilis was suspected but with the advent of the Wassermann reaction this has had to be abandoned. The clinical course suggests an infection but all attempts to recover a specific organism both during life and at autopsy have failed. Harris and Friedrichs (1922) claimed to have transmitted the disease to rabbits by inoculation of post mortem material, but this has never been repeated. It is interesting that an apparently identical morbid condition has been found in certain of the lower animals such as the dog, the pig, the calf, and the deer.

Infection by an ultramicroscopic filtrable virus is a possibility, but Ophüls (1923), drawing attention to similarities between polyarteritis nodosa and acute rheumatism, put forward a further hypothesis that this disease represents another manifestation of a streptococcal allergic state.

The Clinical Picture

In the account which follows the diagnostic standpoint has been maintained throughout, it includes therefore only those points which are of sufficiently frequent recurrence to be of value in diagnosis. Based upon the six most important clinical surveys it represents the study of at least 150 cases.

The disease occurs three to four times more often in males. It most commonly affects those aged 40–49, the extremes recorded being 3 months and 78 years.

SYMPTOMS AND SIGNS

The previous history and family history are of no significance. The onset is acute or gradual in almost equal numbers. The initial symptoms are not especially enlightening save that it is worth recording

in order of frequency complaints of (1) muscular pains, (2) fever, (3) abdominal pains, (4) œdema, and (5) general weakness.

The fifteen fundamental signs of diagnostic value in their order of frequency of occurrence are as follows—

- 1 *Fever* which does not commonly exceed 100° – 101° F and is usually of the remittent type, but afebrile intervals with exacerbations of pyrexia are not uncommon.
- 2 *Increasing general weakness* with loss of weight.
- 3 *Albuminuria*.
- 4 *Cylindruria* of hyaline and granular type commonly with microscopic hematuria.
- 5 *Leucocytosis* to an average figure of 15,000 to 20,000 per cubic millimetre with absolute increase in the polymorphonuclear cells and occasional eosinophilia.
- 6 *Anæmia* of a microcytic type and only moderately severe.
- 7 *Tachycardia* out of proportion to the fever.
- 8 *Abdominal symptoms* and alimentary disturbance. Most commonly these are cramp like or colicky pains, or sensations of soreness and heaviness across the abdomen. Often the abdomen has been surgically explored. Anorexia is frequent, with bowel disorder, both constipation and diarrhoea. Vomiting is less common and hematemesis, melæna and acute perforation of the gut are occasional emergencies.
- 9 *Polyneuropathy* of peripheral type which affects any or all four limbs with considerable motor loss and muscular wasting, but slighter sensory changes.
- 10 *Polymyositis* is especially pronounced in the limb muscles and shows itself by agonising cramps and tender wasting muscles.
- 11 *œdema* is of cardiac distribution.
- 12 *Cutaneous lesions*. The most characteristic lesion is a nodule varying in size from a millet seed to a pea, fixed in the skin but moving on the deeper tissues, occasionally these are purpuric or vesicular. They are painless and frequently evanescent, all trace of a nodule may have disappeared within 24 hours. More rarely and especially in acute forms of the disease a generalised skin eruption is seen. This may be of the hæmorrhagic type, petechial, purpuric or ecchymotic, and occasionally a simple erythema or urticaria.
- 13 *Cardiac signs* are those of heart failure without obvious cause, though electrocardiographic changes may suggest coronary disease—e.g. thrombosis.
- 14 *Enlargement of the liver* (but not of the spleen) with tenderness.
- 15 *Respiratory symptoms*—Cough with diffuse signs of bronchitis and bronchiolitis.

It might be hoped that characteristic changes would be observed in the retinal arteries. Unfortunately this is not the case. The only changes seen are occasionally those of albuminuric retinitis although in one case at least (1935) occlusion of the central retinal artery occurred.

Even in tabulated form the manifestations of this disease appear distressingly protean. Various authors attempting to simplify this picture have distinguished different clinical types of the disease, thus von Schrötter (1899) recognised five groups (1) renal, (2) abdominal, (3) neuromuscular, (4) cardiac and (5) bronchial. In practice, however, such division fails, for the very reason that complexity of symptom is one of the most characteristic features of the disease.

The basic clinical picture is that of a *severe progressive toxæmia characterised by fever, muscular asthenia, loss of weight and anæmia*. These are the symptoms of the active disease process itself, all other signs can be ascribed to local arterial lesions, although frequently these latter effects are so impressive that the general character of the disease may be obscured. This is well seen in Case 3 reported here. If this point is realised, the occasional appearance of more dramatic symptoms, like those of cerebral or meningeal disease, can be brought into

line with the rest of the picture and will not confuse the issue

COURSE

The disease seems almost invariably fatal, although four undoubted cases have recovered and it seems likely that an occasional case may recover unrecognized. The average duration of the illness is from three to four months and the commonest terminations are (1) cardiorenal failure (2) marasmus and far less commonly (3) sudden local vascular accidents.

Chronic forms have been occasionally met with. A very remarkable case with a total duration of 12 years illness was described by Macalaine and Nicoud (1932) and one of four years course by Arkin (1930). Each of these was characterised by alternating periods of remission and exacerbation and this Arkin suggests is a feature of the less acute types since each febrile recrudescence indicates the development of fresh arterial lesions.

No treatment has been found of any value.

DIAGNOSIS

The difficulties are obvious and are reflected in the variety of diagnoses that have been made. Hidden sepsis, typhoid fever, acute abdominal condition, trichiniasis, nephritis, peripheral neuritis, myositis, miliary tuberculosis, dysentery, purpura, septic endocarditis, meningitis and encephalitis have at various times been simulated. At least 30 cases however have been diagnosed during life and though some of these were only discovered at exploratory laparotomy and others after biopsy of cutaneous lesions in a small group the diagnosis has been made on clinical grounds alone.

The rarity of correct diagnosis must at least in part be due to unfamiliarity with the disease. It is suggested therefore that if the following points are borne in mind this difficulty may to some extent be overcome. (1) The possibility of polyarteritis nodosa should be considered—

- (a) In any illness characterised by severe progressive toxæmia with fever, muscular anæmia and loss of weight.
 - (b) In any illness having the character of an infection where there is complete failure to locate the infection.
 - (c) In any illness where there are unusual and apparently unrelated combinations of signs for example nephritis associated with peripheral neuritis, heart failure, skin rashes or abdominal symptoms.
- (2) The diagnosis of polyarteritis nodosa being under consideration reference should be made to the fifteen cardinal symptoms and signs previously given.
- (3) The diagnosis may often be clinched by biopsy of cutaneous lesions or in their absence of skeletal muscle.

Case histories *

CASE 1

Mrs A. B. aged 60 a retired hospital cook was admitted to hospital on May 8th 1933 under the care of Dr Geoffrey Evans, complaining of general weakness, cough and fever.

History.—Five months previously she began to feel off colour with loss of energy and strength. One month before admission she lost her voice for a few days and had shivering attacks at night. There was an evening rise in temperature to about 100° F. and she remained in bed. Two weeks later she started to cough with much colourless watery sputum and the temperature remained continuously raised. She noticed increasing

shortness of breath with palpitations and on occasions some swelling of the ankles. There had been no true night sweats but she had lost weight. At the age of 57 she had had pneumonia, and when 53 she had a right sided stroke from which she made a gradual complete recovery.

The family history was not significant except that her mother had died of chronic phthisis. Habits were satisfactory.

On examination she was pale and wasted and looked older than her years, slightly dyspnoic and cyanosed. The temperature was 101° F. pulse rate 110 and respirations 20. The eyes were normal with clear fundi and retine and normal pupil reactions. Fauces were somewhat inflamed; she was edentulous. A lymph node was palpable in each anterior triangle of the neck and in the right axilla. The chest showed pigeon breast deformity and was very poorly covered. Movement was poor but equal percussion note resonant generalised rhonchi were heard with fine crepitations at both bases especially in the left axilla. The heart was normal in size and the sounds regular and natural but the rate was rapid (100-120). The radial artery was thickened the blood pressure 140/70. The abdomen showed no abnormality except that the liver was palpable a finger breadth below the costal margin. There was some stiffness of most joints and many showed the appearances of chronic rheumatoid arthritis. The tendon reflexes in the upper limbs were normal. The abdominal reflexes were not obtained. Knee-jerks were present. Ankle jerks absent. Plantar response flexor. Sensation was not tested. The urine output was normal, specific gravity 1010-1020, no abnormal constituent found; on culture it was sterile. Blood count—

Red cells	5,240,000	White cells	35,000-40,000
Hæmoglobin	74%	Polymorphs	27,300
Colour Index	0.7	Lymphocytes	7,900
		Eosinophils	720

Widal reaction negative to enteric group *Brucella abortus* and *B. melitensis*. Blood culture was sterile. Repeated examination of sputum revealed no tubercle bacilli. Radiograms of chest showed no abnormality in the lung fields.

Course.—The fever continued the temperature swinging in 24 hours between 99 and 102° F. and the pulse between 110 and 120 per minute. The general condition showed little change. The signs in the lungs persisted and gave rise to a tentative diagnosis of miliary tuberculosis despite negative sputa and radiograms. On June 20th (6 weeks after admission) she first complained of abdominal discomfort and this became considerable though on repeated examination no definite abnormality could be detected. The stools were now loose but contained no blood. On July 2nd (8 weeks after admission) she complained of pain on micturition and a specimen of urine was found to contain red and white blood-cells, a few granular casts, and *Bacillus coli* in profusion. The infection cleared with treatment but the urine continued to contain albumin and macroscopic blood. Weight had been lost rapidly—over a stone in two months since admission—and she became progressively weaker. Examination of the abdomen now revealed general tenderness especially in both posterior renal angles but neither kidney could be felt. By July 18th (10 weeks after admission) she was mentally wandering incontinent of urine and gradually became drowsy. The blood urea was found to be 120 mg. per 100 c.c. The temperature became subnormal and she slowly sank into a quiet coma and died on July 22nd 10½ weeks after admission.

Autopsy.—Typical nodules were seen in the mesentery. On section the kidneys showed appearances suggestive of focal abscess formation, and on microscopic examination all the kidney vessels showed extreme leprosy of inflammatory change with numerous zones of infarction. The coronary arteries showed similar changes and to a less extent those of the liver.

CASE 2

Mr C. D. aged 45, tape measure maker was admitted to hospital on Jan 2nd 1934 under the care of Prof. F. H. Fraser complaining of pains and numbness in the legs and loss of use of the legs.

* A full account of the pathology of these cases will be published by Dr. Robt. Smith.

History—He was well until 6 weeks before admission when he noticed, on walking, cramp like pains in the calf muscles, these were at first relieved by resting. He next found difficulty in straightening the legs and the pains became worse. He managed, however, to remain at work until 4 weeks before admission when he had to rest with the feet up. At this time he lost his appetite and he thought he was rapidly losing flesh. The bowels were constipated. While in bed 13 days before admission, he suddenly felt pins and needles in the left foot and on putting the foot to the ground he was unable to feel the floor though he could still walk. Two days later the right foot became similarly affected and soon he was unable to use his legs as they "gave" under him. The cramp like pains ceased but he was completely paralysed and the feet now became increasingly swollen. There was 4 days before admission a gradual onset of numbness in the left hand with loss of power in the whole limb. Apart from these symptoms he had had a tendency to vomit after breakfast and this had become worse during the last two weeks. The past history was not significant save that his work brought him in contact with lead paint. He was a temperate man.

On examination he was thin, pale and slightly breathless. The temperature was 101.2° F, the pulse rate 100, and respirations 29. The eyes were normal, fundi and retinae clear. Teeth were fair, tongue furred, tonsils and fauces healthy. The thyroid was normal in size and there were no enlarged lymph nodes in the neck, axilla, or groins. The chest appeared normal but percussion note was impaired at both bases and many crepitations were heard. The heart was slightly enlarged, the apex beat being $\frac{1}{2}$ in outside the nipple in the fifth space. At the apex a soft systolic bruit followed the first sound and was conducted into the axilla, the sounds otherwise were normal and the rhythm was regular. The radial artery appeared healthy and the blood pressure was 146/82 mm Hg. The abdomen was protuberant and tympanic there were no signs of free fluid. No viscus was palpable and there was no tenderness. The abdominal reflexes were present. There was oedema of the lower third of the legs and of the feet on both sides.

Nervous system—Cranial nerves were normal. The arms showed no obvious wasting, but there was much loss of power in all movements of the left arm and hand and diminished sensation to cotton wool in the ulnar and radial nerve distribution of the left hand. Tendon reflexes were symmetrical but obtained with difficulty. In the legs the thigh and calf muscles were flaccid and there was much wasting below the knees. Only slight movement at the left hip joint was possible, all other movements of both legs were abolished and there was bilateral foot-drop. There was loss of light touch and pin prick sensation over a stocking area in both legs, the left being more complete than the right. The right knee jerk was obtained but the left knee jerk and both ankle jerks were absent, the plantar responses were flexor. The urine output was satisfactory, specific gravity 1020, it contained a trace of albumin but no other abnormal constituent. The blood—

Red cells	5 150 000	White cells	19 000
Hæmoglobin	80 %	Polymorphs	15 580
Colour index	0.8	Lymphocytes	2 660
		Large mononuclears	570
		Eosinophils	100

The Wassermann and Sigma reactions were negative. Cerebro spinal fluid entirely normal. Wassermann and Sigma reactions negative. The sputum was three times negative for tubercle bacilli.

Diagnosis—Toxic polyneuritis

Course—After a week the temperature had gradually fallen to 99° F but the pulse and respirations remained at the previous level. He complained much of paræsthesia and muscle cramps in both legs and some tingling in the right hand was felt but power in this limb remained good. He continued to cough much watery sputum and the lung signs were increased. The urine now contained a cloud of albumin and the deposit showed granular casts. The blood urea was 160 mg per 100 c cm. A week later after some temporary slight improvement, he relapsed became dyspnoic and exanosed and coughed up blood stained sputum. The temperature, blood, and

respirations all rose, there were signs of consolidation at the base of the left lung. The next day, though seeming brighter he collapsed while being washed and died suddenly, two weeks after admission.

Autopsy—The vascular lesions were widespread. The heart was dilated but the coronary arteries appeared healthy. There was an effusion in the left pleural cavity and broncho-pneumonic changes in the left lung. The intestines were distended and numerous nodules involved the whole of the alimentary tract and the omentum. The liver was congested and there was much arteritis with aneurysm formation. The kidneys had several infarcts and the arteries in these showed acute changes of polyarteritis. The arteries to the leg muscles and nerves were considerably affected and the sciatic nerve itself was oedematous and reddened.

CASE 3

Mrs E. F., aged 58, housewife, was admitted to hospital on Jan 9th, 1934, under the care of Dr Hinds Howell, complaining of passing little urine, vomiting, and abdominal pain after micturition.

History—She had been well until five weeks before, when she had an illness characterised by malaise, head ache, and upper respiratory catarrh with cough. This was diagnosed as influenza. A week later she began to have abdominal discomfort after passing water and she noticed she passed very little urine and that it was highly coloured. She felt very poorly, having constant frontal headache and vomiting after every meal. The urine was examined by her doctor and found to contain much albumin. There had been no visual disturbances. She had been subject to recurrent cough with sputum but there was no history of previous kidney disease, tonsillitis, or scarlet fever.

On examination she was pale and ill, perpetually retching or coughing. The skin was coarse and dry. Temperature 100.6° F, pulse rate 92, and respirations 20. The eyes were normal as regards pupil reactions, discs, and retinae. The tongue was furred and dry, fauces inflamed, and there was gross dental sepsis. The thyroid was normal in size. The chest appeared normal but many coarse râles were heard, especially at the left base. The heart was not enlarged, the first sound at the apex was soft but otherwise the sounds were clear and regular. The blood pressure was 125/75 mm Hg. The abdomen was normal, no viscus being palpable. Neither the knee jerks nor the ankle jerks were obtained, the plantar responses were flexor. There was no oedema of the ankles. The urine was highly coloured and reduced in quantity, the specific gravity was 1018, there was a cloud of albumin present, but no other abnormal constituent. The deposit contained granular casts and a number of red blood corpuscles. Culture was sterile. Blood count—

Red cells	4 820 000	Colour index	0.80
Hæmoglobin	84 %	White cells	10,800
Blood urea	85 mg/100 c cm		

Diagnosis—Chronic nephritis, bronchial catarrh, and uræmia.

Course—After one week the temperature and pulse fell and remained normal and the patient felt rather better though there was still some nausea and retching. The signs in the chest persisted. The urine output was greatly diminished and abdominal discomfort was much complained of, especially after micturition. On Jan 22nd some teeth were extracted under gas and oxygen anaesthesia and again on Jan 26th. Following the second extraction there was considerable hæmorrhage from the gums and her general condition deteriorated with increase in the vomiting, exanosis, and gradual decline into coma. The temperature fell, the chest became full of moist sounds, and she died on Jan 27th, 18 days after admission. The blood urea on the day before her death was 380 mg per 100 c cm.

Autopsy—No typical appearances were seen macroscopically. The kidney cortex was reduced and the surface had a peculiar blotchy appearance. On microscopic section however the larger vessels of the kidney showed pronounced acute periarteritic changes, but there was no infarction. The arteries in the liver were similarly affected though to a lesser degree.

CASE 4

Miss G H, aged 47 lady's companion was admitted to hospital on June 30th 1936, under the care of Dr Geoffrey Evans complaining of general weakness.

History.—For 2½ years she had suffered from nasal catarrh with frequent sneezing and also much cough with a little phlegm. She had become rather breathless and easily tired and had lost 4 st in weight within the last two years. One month before admission she had three teeth extracted under local anæsthesia (cocaine) and the following day her feet became swollen. A few days later after taking a medicine containing 5 grains of potassium iodide the whole of the face became swollen and the eyes closed. After treatment with starch poultices the skin desquamated leaving a painful weeping surface but this had since gradually healed. At this time she was very weak and breathless and the ankles remained swollen, so the major part of the day was spent in bed. Two days before admission on putting her feet to the ground she found they would no longer support her. The appetite had been fairly good and she had taken a full and varied diet. The digestion was good and the bowels work d normally. There were no other symptoms of note. Her habits were excellent and the only other medicine taken before admission was Easton's syrup. She had had no previous illnesses. No family history of allergy was obtained.

On examination she was a thin tired looking woman, breathless and speaking slowly with an effort but mentally alert. The temperature was 99 F, pulse rate 140 and respirations 20. The musculature was generally flabby and she was unable to turn over in bed by herself. The face was covered by a healing granulating surface, the skin elsewhere was dry and inelastic. On the dorsum of the hands and the sides of the trunk a peculiar eruption was seen. This consisted of mauve-coloured raised patches up to the size of a shilling several of which showed surface scaling; they were faintly reminiscent of lichen planus. The eyebrows were deficient but the hair on the head was normal. Mucous membranes were pale. Lujal reactions were normal and fundi and retinas were clear. The tongue was furred, fauces and tonsils were normal but there was considerable dental sepsis. The thyroid was normal and there were no enlarged glands in the neck, axillæ or groins. The veins in the neck were full and pulsating. The chest was poorly covered but movement was good. Breath sounds were harsh with prolonged expiration universally; rhonchi and sibilus were heard in the upper zones of both lungs and coarse râles at the bases. The cardiac impulse forcible and heaving was seen in the sixth space the apex beat being in the nipple line. The heart was not enlarged to the right of the sternum. The rhythm was regular, a loud systolic bruit replaced the first sound at the apex, but the sounds at the base were clear though the pulmonary second sound was much accentuated. The radial artery was somewhat thickened. The blood pressure was 130/110. The abdomen was very lax and abdominal reflexes were not obtained. The liver enlarged and palpable three fingers breadth below the costal margin was smooth on surface and tender. No other viscera was palpable; there was no tenderness and no free fluid. The arms appeared very thin with muscles much wasted, there was bilateral wrist drop. Movements of the upper arms were weak, the grip was poor and no voluntary movement was possible at the wrist joints. All tendon reflexes in the upper limbs were present symmetrically; there was no sensory loss but the muscles were tender on pressure. All the muscles of both legs were wasted and both feet were redematous. The legs lay externally rotated and there was bilateral foot and toe-drop. Both little toes were blue and cold but pulsation was felt in the dorsalis pedis arteries. Movements at the hip and knee were weak and required great effort and there was no movement at either ankle joints. Both knee jerks were absent; the right ankle-jerk was also absent but the left ankle jerk was obtained on reinforcement. Plantar responses were flexor. There was some hypoaesthesia over the dorsum of both feet and vibration sense was markedly diminished.

The urine was diminished in output; specific gravity 10.5; it contained albumin (0.14 g per 100 ccm)

centrifuged deposit showed 8-10 white cells and 2-4 red cells per field and many granular and epithelial casts on culture it was sterile. Blood count—

Red cells	3 750,000	Blood urea	
Hæmoglobin	70 %		
Colour index	0.9	Cholesterol	37 mg/100 ccm
White cells	11,000		
Polymorphs	0.433	Serum proteins	130 mg/100 ccm
Lymphocytes	1.400		
Eosinophils	55	Albumin	3.1 g/100 ccm
Large mononuclears	165	Globulin	1.9

Radiography of the chest showed general enlargement of the heart and appearances compatible with congestion in the lung fields. Electrocardiogram showed a regular sinus rhythm at 107 per minute with low voltage QRS complex and inverted T wave in lead III.

A diagnosis was not made but for the most part opinion favoured a conception of a cardiovascular renal atherosclerosis with heart failure and a peripheral polyneuritis of unknown toxic origin.

Course.—The temperature remained about 99 F and the pulse-rate averaged 110. The oedema increased in the legs and in the lumbar region the right hand also became swollen. The blood pressure improved to 168/98 mm Hg following digitalis therapy but the patient became progressively weaker and in the second week lost control of the sphincters. A fresh violet-coloured eruption made its appearance on the left hand. Dr A C Roxburgh was unable to identify this with any known skin disease. At the end of the second week temperature, pulse- and respiration rates began to rise and a crop of petechiæ appeared on the trunk and limbs. A blood culture taken at this time remained sterile. The blood urea increased to 90 mg per 100 ccm, and the patient slowly sank into a coma with low-grade delirium and died on July 18th two and a half weeks after admission.

Autopsy.—There were widespread changes. The heart was dilated and there was a recent infarct at the apex with much softening of the muscle. Bilateral pleural effusions were present and the lungs showed many small infarcts. Small nodules were seen on the arteries of the mesentery. Both kidneys and the liver contained infarcts and microscopically the arteries of every organ examined showed the changes of polyarteritis. The sciatic nerves were swollen with patchy haemorrhagic areas; many vessels in their neighbourhood contained nodosities.

Cases	1	2	3	4
(1) Fever	+	+	±	+
(2) Weakness with loss of weight	+	+	-	+
(3) Albuminuria	+	+	+	+
(4) Cylinduria	+	+	+	-
(5) Leucocytosis	+	+	+	+
(6) Anæmia	±	-	-	+
(7) Tachycardia	+	-	-	±
(8) Abdominal and alimentary signs	+	+	±	-
(9) Polyneuritis	+	+	+	+
(10) Myositis	-	+	-	±
(11) Oedema	-	+	-	+
(12) Skin lesions	-	-	-	+
(13) Cardiac signs	-	±	-	+
(14) Hypertomegaly	+	-	-	+
(15) Respiratory signs	+	+	+	+
Total	10½	10½	6	13½

These patients had absent ankle-jerk

COMMENTS

Reviewing these cases in the light of the previous discussion it is interesting to note that three out of the four were women and that they were all beyond the common age period. In Cases 1, 3 and

4 the earliest complaints were typical—i.e., general weakness, fever, and pains in the legs. The course of the illness was acute (8 weeks) in two cases, slowly but gradually progressive in one (7½ months), and of long duration (2 years) with an acute terminal exacerbation in the last. In the Table are summarised the fifteen cardinal signs of diagnostic value in relation to each case.

From this it will be seen that Case 4 presented a typical clinical picture and should certainly have been diagnosed. Cases 1 and 2 were reasonably suggestive, while Case 3 with such purely localised signs was obviously beyond the possibility of clinical diagnosis.

Summary

Four new cases of polyarteritis nodosa are described in detail. The clinical findings are reviewed and from a survey made of 150 cases previously published a composite clinical picture has been drawn. It is believed that familiarity with this clinical picture will facilitate the diagnosis of the disease, which until now has generally been first recognised post mortem.

I am indebted to the physicians in charge for permission to publish the notes of these cases, and wish to express my thanks to Dr A. H. T. Robb Smith for the post mortem reports and to Dr Geoffrey Evans for much helpful criticism.

REFERENCES

- Arkin A (1930) *Amer J Path* 6 401
 Bernstein A (1935) *Amer J med Sci* 190 317
 Cathala J (1929) *J Méd Chir Prat* 100 183
 Curtis A, and Coffey R (1938) *Ann Intern Med* 7, 1354
 Dickson W. E. C. (1907) *J Path Bact* 12 31
 Fletcher H. M. (1892) *Beitr path Anat* 11, 323
 Grüber G. B. (1926) *Z. Hyg. Gefässkr* 18 319, 347, 359, 381, 399
 Harris W. H. and Friedrichs A. V. (1922) *J exp Med* 36 219
 Klotz O (1917) *J med Res* 37 164
 Kussmaul, A. and Maier R. (1866) *Arch f klin Med* 1 484
 Lamb A. (1914) *Arch intern Med* 14, 481
 Macalpine, M. and Nicaud P. (1932) *Pr med* 40 665
 Meyer P. (1921) *Berl klin Wschr* 58 473
 Ophüls W. (1923) *Arch intern Med* 32 870
 von Rokitsansky C. quoted by Eppinger (1852) *Denkschr Akad Wiss Wien* 4 49
 von Schrötter L. (1899) *Wien klin Wschr* p. 404
 Strong G. F. (1928) *Canad med Ass J* 19 531

CYSTIC DEGENERATION OF THE CHORIONIC VILLI IN THE SIXTH DECADE

By CHARLES HOLLÓSI, M.D.

(From the Surgical Clinic, University of Tisza István Debrecen, Hungary)

To the pathologist the aetiology of cystic degeneration of the chorion villi is still unsettled. The fact that none has been accepted explains the numerous and extraordinary theories that have been advanced to account for its occurrence.

Some claim it to be foetal, others maternal in origin, while some even attribute it to a certain type of sperm cell. The following are other factors held to be responsible—

Degeneration of the ovum or its parts caused by the hyperfunction of the corpus luteum. Hypofunction of the corpus—a circulatory disorder, injury to the placental capillaries by toxic products from the maternal blood stream—over production of mucous tissue within the villi into which it extends at first alone but afterwards accompanied by blood vessels—a maldevelopment of the blood vessels.

Among the more notable experiments are those of Aichel (Sathmary 1926) who by macerating the

placenta in animals was able to bring about cystic degeneration in the chorion villi. In hydatidiform mole secondary corpus luteum cysts appear in the ovary, these vary in size and are generally bilateral. Cottalorda (1923) has shown that cystic degeneration in the ovary was present in 50 per cent. of the cases of cystic degeneration of the chorion villi, and in 94 per cent of the cases of chorion epithelioma.

The appearance of a vesicular mole is peculiar. The mass may be as large as a man's head, covered more or less with decidua, which upon incision reveals innumerable small cysts, some as large as grapes or even as hen's eggs, connected with each other or with the base of the chorion by pedicles of varying thickness. A microscopical section through a villus shows distended cells, with an over production of epithelial cells, the Langhans' cell layer, and the irregular syncytium cells.

Cystic degeneration of the chorion villi may occur at any age. Evidently the disease occurs most frequently in multiparae between forty and fifty and very seldom above this age, one case is reported of a girl aged nine. Estimates of its incidence vary from 1/650 to 1/1347.

CASE HISTORY

A multipara, aged 54, was sent by her physician with a diagnosis of malignant tumour of the uterus. Menstruation had begun at 13, recurring at regular 28 day periods lasting 4–5 days. She married at the age of 16, and had 15 normal pregnancies. At the age of 44, in her last pregnancy, she gave birth to twins, after which her periods stopped. In January, 1924, there was a slight haemorrhage and its repetition led her to visit her physician, who upon examination diagnosed malignant tumour of the uterus and directed her to the clinic for operation.

The day after her arrival at the clinic a rather serious haemorrhage occurred necessitating physiological infusions. A rather large mass of cystic chorion villi was discharged (Fig. 1). To check the haemorrhages after the uterine cavity had been well irrigated drugs were given to contract the uterus.

The patient was medium sized and well developed. Thoracic organs normal.

Vaginal examination—Scars of perineal laceration due to delivery. Large vaginal vault erosion of external os which admitted the first phalanx of middle finger bloody discharge. Enlarged uterus about the size of a foetal head soft, normal fixation, no adhesions. Urine normal.

The diagnosis was erosion of the cervix metrorrhagia, and either submucous fibromyoma of the uterus or carcinoma of the body. She was carefully curetted and a pathological examination was made of the scrapings. For one week her temperature was high, but three weeks later she left the clinic cured.

Pathological report (by Prof F. Orsós)—The material for the examination consists of a mass of swollen vesicular moles embedded in clotted blood. The vesicles are of various sizes. Among these vesicle like villi there are several that are of normal thickness and type. These, upon closer examination and after longitudinal sections were made are seen to be cross sections of the processes of the vesicular villi. No normal blood filled vessels are



FIG. 1—Mass of cysts discharged per vaginam (The scale is in centimetres).

found although here and there the remnants of what might have been blood vessels can be discerned. The vesicles are in various stages of degeneration. In some the outer epithelial layer is quite normal with the nuclei staining well in some it is degenerate while in others it is entirely absent. Some have completely degenerated even in the stroma. The cells of the cyst are distended and loosened the interstices being filled with a coagulated mucous fluid. In some vesicles the outer cellular wall shows crowding and as a result of shrinkage resemble the gyri of the brain. Where the epithelial layer of the



FIG 2.—Section of scrapings from uterus

vesicle is in fairly good condition various changes can be seen: in some places the epithelial cells are low and cuboidal in others pseudo polypoid formations are present. Where the epithelium is thickened certain cells are distended forming a pseudo-lumen giving the epithelial layer a ragged appearance. The epithelial layer closely resembles the Langhans layer while the synovium is rather poorly represented (Fig 2).

A recent examination—the patient is now 65—showed the following: rectocele cystocele a senile atrophied vaginal vault, a normal small uterus, no adhesions. External os is normal.

DISCUSSION

The clinical diagnosis of these cases unless vesicles are discharged is often very difficult, especially before as well as after the menopause. Haemorrhages at this age quickly lead one to suspect malignant tumour of some sort. If the characteristic cysts are discharged there can be no doubt as to the nature of the case. Curettage is of great importance but the dangers of perforation must not be forgotten (Fromme 1909).

The prominent symptoms associated with cystic degeneration of the chorion villi are rapid increase in the size of the uterus and discharge of blood or of bloody serum.

After examining the patient one could exclude everything but the uterus as the source of the haemorrhage. One first thought of carcinoma of the body but the size and softness of the uterus could not entirely exclude fibromyoma though the infrequency of haemorrhages from a fibroid after the menopause was against it. Curettage made the diagnosis certain. No matter at what age cystic degeneration of the chorion villi occurs the patient is put out to three serious dangers—fatal haemorrhage septic infection and chorion epithelioma. In 50 per cent. of the cases chorion epithelioma develops after cystic degeneration and this is why it is important to keep the patient under close observation. It may develop even after many years but in this case it has not yet been noted. Some advocate radical treatment but the middle path is perhaps the best—close observation of the patient with bi-monthly examinations.

In my opinion there is a close connexion with the condition of the ovum. This patient's last delivery was twins at the age of 41. Another theory is that

the mole is due to inclusions of embryonic tissues that may be influenced by hormones during pregnancy. At the menopause when the influence of the pituitary gland diminishes it is possible that these changes act as an irritant to the embryonic remains causing their growth. The part played by the hormone can be explained by the fact that in 36 per cent. of the cases the mole occurs in women over 45. It is quite possible that a known hormone is responsible, but it may be that unknown hormones are the activating agents. If these should be discovered light might be thrown upon the cause of malignant tumours at this stage of life.

REPEATED PERFORATION OF A PEPTIC ULCER

WITH SUBSEQUENT TREATMENT

By A. C. LYSAGHT F.R.C.S. Eng.

CONSULTING SURGEON TO THE PONTPOOL AND DISTRICT HOSPITAL ASSISTANT SURGEON TO THE CARDIFF ROYAL INFIRMARY AND

W. BARRY WILLIAMS B.Sc., M.B. Wales

SURGEON TO THE PONTPOOL AND DISTRICT HOSPITAL

A PERFORATION of a peptic ulcer occurring more than once in the same patient is fortunately not very common. With regard to the results of patients treated by simple suture of the perforation opinion varies a great deal but in our experience the results are very good and agree with Prof. Grey Turner's¹ figures (1927) over a long series of cases in which 50 per cent. are cured and 74 per cent. are so well that they do not require further operative treatment. To have the misfortune to perforate a peptic ulcer four times in as many years must be considered extremely rare, and we therefore record a case in which this occurred with the treatment given and lessons learnt about the case.

CASE REPORT

A minor patient was aged 26 at time of first perforation. There was no previous history of importance. A sister had been treated for congenital syphilis, but his Wassermann reaction was negative and he showed none of the usual stigmata. It is of interest to note that his father died of a ruptured gastric ulcer in 1934. It is also important to record that he stoutly denied any gastric trouble whatever—dyspepsia or discomfort until his first perforation in 1932 since when he had never been free from pain or vomiting of varying intensity until his gastrectomy last year.

The first perforation occurred on Feb. 8th 1932. The patient was taken suddenly ill with acute abdominal pain at 2.30 P.M. while at work. He was admitted into the Pontpool Hospital and the perforation on the anterior wall of the pylorus was repaired by one of us (W. B. W.) the abdomen was closed with drainage.

He continued to have severe gastric symptoms in spite of medical treatment and on Sept. 14th at 3 A.M. he perforated a second time. W. B. W. once again repaired a perforation in the same situation as before and the abdomen was closed with drainage.

After this he remained fairly well for about two years and he returned to work but was never really free from dyspepsia and vomiting. He lost considerable time from work with this trouble and his doctor stated that he was always very tender in the epigastrium. These symptoms increased in intensity and on Dec. 11th 1934 a posterior no loop gastrojejunostomy was performed by a colleague. This operation did not relieve his symptoms in any way and his condition rapidly deteriorated until

¹ Turner G. G. (1927) Quoted in Rowland and Turner's "Operation of Surgery" Vol. 2 7th edit., London, 1.

on July 22nd, 1935, six months later, he perforated for the third time and was repaired by Mr Ioan Jones of Cardiff.

Once again after this, in spite of careful medical treatment, dyspepsia returned worse than ever, and he fell into a very bad state of health and the fourth perforation occurred on August 18th, 1936. The perforation was in the same situation as the previous three—the anterior wall of the pylorus—and this was repaired by Dr J P Jenkins of Pontypool.

No improvement occurred in his health after this, and he may be said to have gone from bad to worse. When seen for the first time by one of us (A C L) he appeared a thin man with an anxious expression, obviously in continuous pain, this pain was uninfluenced by diet, rest, or alkalis. He said that he was in continuous trouble, felt that another perforation was imminent, and was prepared to undergo any operation however dangerous if there was a chance of bringing about some improvement. Examination showed scars of previous operations, considerable epigastric tenderness, and obvious loss of weight, no mass could be felt. He was put on a light nutritious diet and gentle daily gastric lavage, with only slight improvement in his symptoms, and it was considered that further laparotomy was essential.

The operation on Nov. 21st, 1936, was by no means an easy one. It was performed under a combination of local and general anaesthesia. As might be expected, a lot of adhesions required dividing, when the anatomy was fully defined it was found that the spleen had become adherent to the stoma and there was a large ulcer at this situation. When the spleen was detached the stoma was opened into, it seemed as if the spleen had closed a perforation of an anastomotic ulcer. The gastrojejunostomy was undone and a wide gastrectomy then performed by the usual Polya method. Afterwards it was found that the jejunum which had been closed after detachment was very constricted, so that the operation was concluded by an entero-anastomosis. The patient made an uninterrupted recovery.

Subsequent progress—It is only three months since his last operation, so of course it is too soon to claim that he is quite cured but his progress is so satisfactory that one may hope that is so. He married on discharge from hospital. He states that for the first time for 4½ years he can eat anything without any pain, discomfort, or vomiting. His weight before the last operation was 7 st 11 lb and is now 8 st 13 lb. He says "he has never felt so well in his life, and wishes he had had the operation years ago."

The case presents the following points of interest—

(1) The complete absence of gastric or dyspeptic symptoms before his first operation in 1932, after this he was never free from trouble until his gastrectomy in 1936.

(2) The fact that his father died from a perforated peptic ulcer.

(3) The failure of the gastrojejunostomy either to ameliorate his symptoms or to prevent perforation—two of the perforations occurred after the gastrojejunostomy had been performed. At the last operation an anastomotic ulcer was found.

This is the fourth time in our experience that an anastomotic ulcer has formed in conjunction with perforation. In the previous three cases the gastrojejunostomy had been performed at the time of perforation; and in our opinion is a striking criticism of the practice of performing gastrojejunostomy at the same time as the perforation is closed.

It would be interesting to know whether patients who perforate peptic ulcers are also more prone to the formation of anastomotic ulcers if a gastrojejunostomy is performed. At any rate, it seems that if simple suture of the perforation does not cure the peptic ulcer and further, operative treatment appears necessary, gastrectomy may prove more suitable than gastrojejunostomy.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE

At a meeting of this section on March 23rd a discussion on the

Effects on the Respiratory System of Asphyxiating Gases

was read by Dr STUART BLACKMORE of the Home Office air-raid precautions department. He confined his remarks to phosgene, since, although there was a difference of opinion in military circles as to whether lung irritants would be used in war, it was agreed that if they were used, phosgene was the most likely to be tried. Its action was not yet fully understood. Oedema of the lungs, the essential lesion was probably a direct action on the cell, perhaps caused by an alteration in the acid base equilibrium. This was certainly true of chlorine and in many of the chlorine compounds, such as phosgene, it was the chlorine element which determined toxicity. On the other hand there was the German view that the oedema was a secondary phenomenon the primary effect being on the nervous system.

Much more was known about the pathological effects produced by phosgene than about their aetiology. The main factor was lack of oxygen caused by mechanical obstruction by water in the alveoli. At an early stage a thin layer of water could be demonstrated on the alveolar epithelium and although there might be no impairment of function at that stage complete rest was needed or sudden death might result. Clinically, there were

two well defined types, the plum coloured or blue type, showing signs of CO₂ retention, and the more serious grey type in which anoxæmia predominated. The blood became very concentrated and it was worth considering whether apparatus for testing the degree of concentration of the blood might not be required on a large scale, as in cholera epidemics. The pathology of the lung lesions in mustard gas poisoning was, of course, quite different. The essential lesion here was a burn with consequent inflammation and secondary infection, no anoxæmia was present.

The one essential of treatment was oxygen. About that there was no argument. Administration could not begin too soon or go on too long. Bleeding was definitely useful in the early stages. It acted perhaps by promoting absorption of the fluid in the alveoli. Atropine had proved valueless and was contra-indicated. Opinions differed on the value of transfusion and on the solution to be used. In America urease was favoured and also emetine to cause a prolonged constriction of the capillaries. In this country, however, Barcroft had decided that transfusion had not proved of any value.

Dr R V CHRISTIE supported the German views. He suggested that the experiments of Aschoff and others in 1920 in which vagal section was shown to render an animal immune to phosgene had not been disproved. Much attention had subsequently been paid in Germany to "vagal pneumonia" and it seemed probable to him that the lung oedema was caused by irritation of the vagal nerve endings. The dyspnoea was certainly not due to anoxæmia, as a recent discussion on flying at high altitudes had shown. He believed that the Germans favoured glucose solutions for transfusion.

In answer to questions, Dr BLACKMORE regretted that in France and in this country too much emphasis had been laid on the vesicant gases to the exclusion of interest in the lung irritants. Provided the lungs were previously healthy and mustard gas could be excluded it was true that the lung irritants left no disability and produced either death or complete recovery. No fibrosis followed, in contradistinction to mustard gas. Certainly no predisposition to tuberculosis was caused. He knew of no instance of lumbar puncture being used in treatment, but thought that other drugs of the atropine group might be tried. There was no evidence that phosgene acted as a general protoplasmic poison. As regards the method of election for the administration of oxygen conservation must be kept in mind. It might have to be given for days or even weeks. He knew of a case which had recovered after two weeks continuous oxygen though in three-quarters of the fatal cases the patient died in the first 24 hours. Some sort of mechanism like the Haldane apparatus was therefore necessary which would prevent waste during expiration. It was not necessary to warm the oxygen but a reduction valve and flow metre were almost essential. The rate of administration should be from 3 litres per minute increased up to 10 litres per minute if almost immediate clinical improvement was not shown. Above 10 litres the oxygen concentration in the alveoli did not increase. It should be given for 25 minute periods with 5 minute intervals to observe the clinical effect of discontinuance. Administration of oxygen was difficult as the patients were dyspnoeic and restless and there was much expectoration and sometimes vomiting.

SECTION OF COMPARATIVE MEDICINE

At a meeting of this section on March 24th with Mr G. W. DUNCAN the president in the chair a discussion on

Nutrition and its Effect on Infectious Disease

was opened by Prof. S. J. COWELL. He pointed out the difficulty of making controlled observations on the influence of one factor alone in the nutrition of human beings. While therefore a connexion between faulty feeding and susceptibility to infectious disease had been generally admitted the evidence on which specific changes in diet had been related to definite types of infection was conflicting. Investigations of the subject had fallen into three groups. In the first, attempts were made to correlate the incidence and course of an infection with diets characteristic of different races, social groups or institutions. An example of this was Nicholls's survey in Ceylon suggesting that the malaria epidemic of 1933-34 would not have been prevented but might have been less disastrous had the masses been better fed. Other examples were Orr and Gilks's observations of two East African tribes—the one which ate mostly cereals allowed more admissions to hospital for bronchitis, tropical ulcer and malaria than the other which lived chiefly on meat, milk and raw blood—and those of Spence and M. Gonigle who separately studied the possible relation of diet to bronchitis. In the second group attempts were made to determine the effects of changes in diet on the incidence of infectious diseases both in a whole population and in isolated communities. From time immemorial famine had been thought to bring pestilence closely in its train and many held that the increased incidence of tuberculosis in Central European countries towards the end of the late war was due to the restricted diets. The

third group of observations was concerned with the part played by individual food constituents in determining resistance to infections. Severe lack of vitamin A was associated with bacterial invasion in all species of laboratory animals and the same relation had been reported in man but studies of the effect of liberal supplies of it had been inconclusive. Conflicting results had been reported by different observers of its use in puerperal infections, pneumonia, measles and common colds with perhaps a slight preponderance of evidence of benefit to colds. The speaker had observed no effect on the winter sickness rate among R.A.F. recruits nor on the occurrence of otitis media complicating scarlet fever from giving vitamin A concentrate. Such results could not be interpreted as proof that the vitamin played no part in determining the resistance of human beings to infections but suggested that dramatic effects could not be expected from giving vitamin A to patients likely to be already receiving a sufficiency.

Speaking of vitamin D Prof. Cowell said that clinicians recognised the tendency of children with rickets to develop bronchitis and pneumonia though in one or two careful studies pneumonia had been found to attack as many children with well calcified bones as with radiological evidence of rickets. The mechanical obstruction to respiration provided by a deformed and yielding chest wall might explain in part the tendency generally believed to exist of ricketty children to succumb to pneumonia. Vitamins B and C had each been put forward as preventives of infection and iron deficiency had been shown by Dr Helen Mackay to be associated with high incidence of infection of the respiratory tract in infants. The speaker felt that good nutrition was more likely to determine the course an infection would take than whether infection would occur. The available evidence relating to man so far did not warrant the view that one isolated food constituent was responsible in any specific way for maintaining the body's resistance to infection. It was possible that an optimum state of nutrition lasting for a longer period of life than had been aimed at in most tests was necessary to secure the maximum degree of resistance to infection.

Miss HARRIETTE CHICK, D.Sc., pointed out that the variables influencing incidence of infection included besides the state of nutrition the dosage of infection, the virulence and such factors as chill, fatigue and anxiety. In any acute epidemic these other variables had the greater influence having a wide range of variation and only a short time to work in; they were relatively less important in slow chronic conditions. The state of nutrition was more likely to be important in determining the course and sequelae of infections than their incidence, thus influenza or measles might run through a public school as quickly as through a school whose children received a diet which was deficient according to modern standards. The severity of the 1918 influenza epidemic might have been due to the poor state of nutrition. Dr Chick then gave two examples of chronic disease apparently influenced by nutrition: the first was the infective conjunctivitis which a few decades ago had been widespread among poor children (though never among the better-to-do) but was now extinct. The second example was the incidence of tuberculosis in two parts of Austria; between the years 1913 and 1919 the deaths from tuberculosis remained almost constant in Salzburg a rural area getting plenty of butter and meat whereas in Vienna where the diet was poor quantitatively and qualitatively at the end of the war the deaths had nearly doubled. It seemed

on July 22nd, 1935, six months later, he perforated for the third time and was repaired by Mr Ioan Jones of Cardiff.

Once again after this, in spite of careful medical treatment, dyspepsia returned worse than ever, and he fell into a very bad state of health and the fourth perforation occurred on August 18th 1936. The perforation was in the same situation as the previous three—the anterior wall of the pylorus—and this was repaired by Dr J P Jenkins of Pontypool.

No improvement occurred in his health after this, and he may be said to have gone from bad to worse. When seen for the first time by one of us (A C L) he appeared a thin man with an anxious expression, obviously in continuous pain, this pain was uninfluenced by diet, rest, or alkalis. He said that he was in continuous trouble, felt that another perforation was imminent, and was prepared to undergo any operation however dangerous if there was a chance of bringing about some improvement. Examination showed scars of previous operations, considerable epigastric tenderness, and obvious loss of weight, no mass could be felt. He was put on a light nutritious diet and gentle daily gastric lavage, with only slight improvement in his symptoms, and it was considered that further laparotomy was essential.

The operation on Nov 21st, 1936, was by no means an easy one. It was performed under a combination of local and general anaesthesia. As might be expected, a lot of adhesions required dividing, when the anatomy was fully defined it was found that the spleen had become adherent to the stoma and there was a large ulcer at this situation. When the spleen was detached the stoma was opened into, it seemed as if the spleen had closed a perforation of an anastomotic ulcer. The gastrojejunostomy was undone and a wide gastrectomy then performed by the usual Polya method. Afterwards it was found that the jejunum which had been closed after detachment was very constricted, so that the operation was concluded by an enteroanastomosis. The patient made an uninterrupted recovery.

Subsequent progress—It is only three months since his last operation, so of course it is too soon to claim that he is quite cured, but his progress is so satisfactory that one may hope that is so. He married on discharge from hospital. He states that for the first time for 4½ years he can eat anything without any pain, discomfort, or vomiting. His weight before the last operation was 7 st 11 lb and is now 8 st 13 lb. He says 'he has never felt so well in his life, and wishes he had had the operation years ago.'

The case presents the following points of interest—

(1) The complete absence of gastric or dyspeptic symptoms before his first operation in 1932 after this he was never free from trouble until his gastrectomy in 1936.

(2) The fact that his father died from a perforated peptic ulcer.

(3) The failure of the gastrojejunostomy either to ameliorate his symptoms or to prevent perforation—two of the perforations occurred after the gastrojejunostomy had been performed. At the last operation an anastomotic ulcer was found.

This is the fourth time in our experience that an anastomotic ulcer has formed in conjunction with perforation. In the previous three cases the gastrojejunostomy had been performed at the time of perforation, and in our opinion is a striking criticism of the practice of performing gastrojejunostomy at the same time as the perforation is closed.

It would be interesting to know whether patients who perforate peptic ulcers are also more prone to the formation of anastomotic ulcers if a gastrojejunostomy is performed. At any rate, it seems that if simple suture of the perforation does not cure the peptic ulcer and further, operative treatment appears necessary, gastrectomy may prove more suitable than gastrojejunostomy.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF MEDICINE

At a meeting of this section on March 23rd a discussion on the

Effects on the Respiratory System of Asphyxiating Gases

was read by Dr STUART BLACKMORE of the Home Office air raid precautions department. He confined his remarks to phosgene, since, although there was a difference of opinion in military circles as to whether lung irritants would be used in war, it was agreed that if they were used, phosgene was the most likely to be tried. Its action was not yet fully understood. Oedema of the lungs, the essential lesion, was probably a direct action on the cell, perhaps caused by an alteration in the acid base equilibrium. This was certainly true of chlorine and in many of the chlorine compounds, such as phosgene it was the chlorine element which determined toxicity. On the other hand there was the German view that the oedema was a secondary phenomenon, the primary effect being on the nervous system.

Much more was known about the pathological effects produced by phosgene than about their aetiology. The main factor was lack of oxygen caused by mechanical obstruction by water in the alveoli. At an early stage a thin layer of water could be demonstrated on the alveolar epithelium and although there might be no impairment of function at that stage complete rest was needed or sudden death might result. Clinically, there were

two well defined types, the plum coloured or blue type, showing signs of CO₂ retention, and the more serious grey type in which anoxæmia predominated. The blood became very concentrated and it was worth considering whether apparatus for testing the degree of concentration of the blood might not be required on a large scale, as in cholera epidemics. The pathology of the lung lesions in mustard gas poisoning was, of course, quite different. The essential lesion here was a burn with consequent inflammation and secondary infection, no anoxæmia was present.

The one essential of treatment was oxygen. About that there was no argument. Administration could not begin too soon or go on too long. Bleeding was definitely useful in the early stages, it acted perhaps by promoting absorption of the fluid in the alveoli. Atropine had proved valueless and was contra indicated. Opinions differed on the value of transfusion and on the solution to be used. In America urease was favoured and also emetine to cause a prolonged constriction of the capillaries. In this country, however, Barcroft had decided that transfusion had not proved of any value.

Dr R V CHRISTIE supported the German views. He suggested that the experiments of Aschoff and others in 1920 in which vaginal section was shown to render an animal immune to phosgene had not been disproved. Much attention had subsequently been paid in Germany to 'vagal pneumonia' and it seemed probable to him that the lung oedema was caused by irritation of the vagal nerve endings. The dyspnoea was certainly not due to anoxæmia, as a recent discussion on flying at high altitudes had shown. He believed that the Germans favoured glucose solutions for transfusion.

In answer to questions Dr BLACKMORE regretted that in France and in this country too much emphasis had been laid on the vesicant gases, to the exclusion of interest in the lung irritants. Provided the lungs were previously healthy and mustard gas could be excluded, it was true that the lung irritants left no disability and produced either death or complete recovery. No fibrosis followed in contradistinction to mustard gas. Certainly no predisposition to tuberculosis was caused. He knew of no instance of lumbar puncture being used in treatment but thought that other drugs of the atropine group might be tried. There was no evidence that phosgene acted as a general protoplasmic poison. As regards the method of election for the administration of oxygen conservation must be kept in mind. It might have to be given for days or even weeks. He knew of a case which had recovered after two weeks continuous oxygen though in three quarters of the fatal cases the patient died in the first 24 hours. Some sort of mechanism like the Haldane apparatus was therefore necessary which would prevent waste during expiration. It was not necessary to warm the oxygen but a reduction valve and flow metre were almost essential. The rate of administration should be from 3 litres per minute increased up to 10 litres per minute if almost immediate clinical improvement was not shown. Above 10 litres the oxygen concentration in the alveoli did not increase. It should be given for 25 minute periods with 5 minute intervals to observe the clinical effect of discontinuance. Administration of oxygen was difficult as the patients were dyspnoeic and restless and there was much expectoration and sometimes vomiting.

SECTION OF COMPARATIVE MEDICINE

At a meeting of this section on March 24th with Mr G W DUNCAN the president, in the chair a discussion on

Nutrition and its Effect on Infectious Disease

was opened by Prof S J COWELL. He pointed out the difficulty of making controlled observations on the influence of one factor alone in the nutrition of human beings. While therefore, a connexion between faulty feeding and susceptibility to infectious disease had been generally admitted, the evidence on which specific changes in diet had been related to definite types of infection was conflicting. Investigations of the subject had fallen into three groups. In the first attempts were made to correlate the incidence and course of an infection with diets characteristic of different races, social groups or institutions; an example of this was Nicholls's survey in Ceylon suggesting that the malaria epidemic of 1933-34 would not have been prevented but might have been less disastrous had the masses been better fed. Other examples were Orr and Gilks's observations of two East African tribes—the one which ate mostly cereals showed more admissions to hospital for bronchitis, tropical ulcer and malaria than the other which lived chiefly on meat, milk and raw blood—and those of Spence and Mc Gonigle who separately studied the possible relation of diet to bronchitis. In the second group attempts were made to determine the effects of changes in diet on the incidence of infectious diseases both in a whole population and in isolated communities. From time immemorial famine had been thought to bring pestilence closely in its train and many held that the increased incidence of tuberculosis in Central European countries towards the end of the late war was due to the restricted diets. The

third group of observations was concerned with the part played by individual food constituents in determining resistance to infections. Severe lack of vitamin A was associated with bacterial invasion in all species of laboratory animals and the same relation had been reported in man but studies of the effect of liberal supplies of it had been inconclusive. Conflicting results had been reported by different observers of its use in puerperal infections, pneumonia, measles and common colds with perhaps a slight preponderance of evidence of benefit to colds. The speaker had observed no effect on the winter sickness rate among R.A.F. recruits nor on the occurrence of otitis media complicating scarlet fever from giving vitamin A concentrate. Such results could not be interpreted as proof that the vitamin played no part in determining the resistance of human beings to infections but suggested that dramatic effects could not be expected from giving vitamin A to patients likely to be already receiving a sufficiency.

Speaking of vitamin D Prof. Cowell said that clinicians recognised the tendency of children with rickets to develop bronchitis and pneumonia, though in one or two careful studies pneumonia had been found to attack as many children with well-calcified bones as with radiological evidence of rickets. The mechanical obstruction to respiration provided by a deformed and yielding chest wall might explain in part the tendency generally believed to exist of rickety children to succumb to pneumonia. Vitamins B and C had each been put forward as preventives of infection and iron deficiency had been shown by Dr Helen Mackay to be associated with high incidence of infection of the respiratory tract in infants. The speaker felt that good nutrition was more likely to determine the course an infection would take than whether infection would occur. The available evidence relating to man so far did not warrant the view that one isolated food constituent was responsible in any specific way for maintaining the body's resistance to infection. It was possible that an optimum state of nutrition lasting for a longer period of life than had been aimed at in most tests was necessary to secure the maximum degree of resistance to infection.

Mrs HARRIETTE CHICK, D.Sc., pointed out that the variables influencing incidence of infection included besides the state of nutrition the dosage of infection, the virulence and such factors as chill, fatigue and anxiety. In any acute epidemic these other variables had the greater influence having a wide range of variation and only a short time to work in they were relatively less important in slow chronic conditions. The state of nutrition was more likely to be important in determining the course and sequelae of infections than their incidence, thus influenza or measles might run through a public school as quickly as through a school whose children received a diet which was deficient according to modern standards. The severity of the 1918 influenza epidemic might have been due to the poor state of nutrition. Dr Chick then gave two examples of chronic disease apparently influenced by nutrition, the first was the infective conjunctivitis which a few decades ago had been widespread among poor children (though never among the better to do) but was now extinct. The second example was the incidence of tuberculosis in two parts of Austria; between the years 1913 and 1919 the deaths from tuberculosis remained almost constant in Salzburg a rural area getting plenty of butter and meat whereas in Vienna where the diet was poor quantitatively and qualitatively at the end of the war the deaths had nearly doubled. It seemed

that resistance to infection might be affected by diet while susceptibility was not. Under properly controlled experimental conditions any one specific food factor could be an anti-infective agent, be it iron or vitamin A, but as most infections entered by the nasopharynx, animals suffering from deficiency of vitamin A were particularly susceptible. Dr Chick then described some unpublished experiments carried out with Sir Charles Martin and Dr Bird at Cambridge. They had produced in pigs an intestinal condition resembling a disease of maize eating humans. The pigs received one of three diets: one consisted mostly of maize, in the second the maize was replaced by wheat and barley, in the third yeast was added to the maize diet. Those on the maize alone died, after 8 or 9 weeks, of an infection of the caecum and colon; those on the second diet developed diarrhoea but eventually pulled through; the third group grew rather faster than ordinary pigs. Apparently there was either some latent infection which could only manifest itself when the diet was deficient, or some organism ordinarily non-pathogenic which was then able to invade the tissues. All attempts to isolate the organism had failed. The factor in the yeast rendering the diet satisfactory was water soluble and heat stable and was the anti-infective vitamin to that particular condition; its relation to the vitamin B₂ complex had not been determined.

Mr LESLIE HARRIS, Sc D, said that the excretion of vitamin C normally depended on the intake in the diet; in controlled humans however the excretion suddenly dropped when the subject had a cold or influenza. It normally increased after a test dose but failed to do so in scorbutic children. He had been examining the excretion in infective conditions and found that it was decreased in acute rheumatism in childhood and in tuberculous infection, even during convalescence cases of acute rheumatism continued to excrete reduced quantities, and this finding seemed to tally with the clinical fact that the convalescent children were liable to relapse. Infective conditions apparently reduced the saturation of the tissues to vitamin C, so that patients even when receiving ample supplies excreted it at a lower level than the controls, and the lowered secretion might have some diagnostic value. The question remained whether vitamin C deficiency was the result of fever or the cause of infection. The speaker had estimated the vitamin C content of the tissues and the suprarenals of guinea pigs infected with tuberculosis and had found the content much lower than in the tissues of normal animals; it appeared that the vitamin had been taken up by the tissues. It was certain that deficiency of that vitamin reduced the resistance of guinea pigs to infection and many workers agreed that similar effects were observed in man. If it played some specific part in defence this might be that it was required by formative cells for in its absence scar tissue and hair failed to form. It had also been suggested that it played a part in the formation of blood cells and antibodies, as a high concentration had been found in leucocytes; the theory that it was concerned in antibody formation was plausible but so far treatment by vitamin C dosage had been disappointing.

Mr J. T. EDWARDS, D Sc, spoke of the effects of nutrition in foot and mouth disease. He had been working with rats and had found that the better nourished animals were more susceptible to the disease. Further work had shown that the addition of raw liver and carrot to a diet increased the susceptibility and that the less susceptible animals were definitely

anaemic. Hedgehogs which were very liable to catch the infection did not do so when hibernating. It seemed then that the susceptibility depended partly on increased metabolism rather than on one specific factor. These findings had their parallel in veterinary experience, for animals seemed particularly prone to contract foot and mouth disease when in prime condition and at the prime of life.

Mr H. H. GREEN, D Sc, said that malnourishment was generally believed to predispose to helminth infection. Definite experimental evidence was difficult to obtain on the subject but in one series of experiments poorly nourished animals had shown a greater capacity to produce helminth eggs.

Dr D. F. C. WILSON described how she had investigated 2000 children of different creeds in the Punjab and had come to the conclusion that there was no very definite relation between food deficiency and malaria.

Dr WARREN CROWE said he had produced experimental arthritis in the rabbit by injection of strains of streptococci and had found that those of his animals receiving a diet deficient in vitamins did not develop arthritis, whereas those on full diets did. He suggested that the arthritis was a disease of reaction to a noxious agent, if the animal were sufficiently weakened by poor diet there was no reaction. This conjecture was supported clinically, for patients after lying in bed with arthritis often complained that the pain was worse, although they were really better. A parallel might be found, he thought, in the post-mortem findings of officers dying of influenza in 1918, those who died had often been "fighting fit" and only ill two days, they died of drowning from their own reaction.

Mr A. L. BACHARACH thought that all constituents of diet might play an anti-infective part but that together they acted not as their sum but by integration. Resistance might depend on two factors, but the effect of lack of one only be shown when the other was lacking too. He mentioned that vitamin C excretion was reduced in benzene poisoning, pregnancy and lactation, and that any theory to explain the reduced excretion in fever should also explain it in those conditions. He thought that the benefit of giving ascorbic acid might not be shown during the course of one illness, but might build up the reserves for the next.

Dr HARRIS supposed that the increased activity and demands on the body during pregnancy and lactation might explain the reduced excretion in those conditions.

LIVERPOOL MEDICAL INSTITUTION

At a pathological meeting of this institution on March 11th, with Mr R. KENNON in the chair, a paper on the

Pathological Aspects of Criminal Abortion

was read by Dr W. H. GRACE. He pointed out that the Offences against the Person Act used only the word "miscarriage," meaning the emptying of the uterus at any stage of the pregnancy, and made no attempt to define the word "unlawfully" or to define "lawful" emptying of the uterus, moreover there was no difference in the nature of the crime if the uterus did not contain the products of conception. Death following criminal abortion was usually either (1) quick, being often due to shock, and more rarely to air embolism, or (2) delayed, due to sepsis. The abortionist was more likely to be caught if death

was rapid. The methods of procuring criminal abortion were (1) violence applied generally, including rolling downstairs and kneading or compressing the abdomen; (2) internal administration of drugs on which Dr Grace remarked that there is no drug and no combination of drugs which when taken by the mouth will cause a healthy uterus to empty itself unless it be given in doses sufficiently large to endanger seriously by poisoning the life of the woman who takes it and (3) mechanical injuries to the uterus and its contents either by uterine sounds catheters wire pieces of wood umbrellae ribs, hairpins, penholders and the like or by injection of fluids such as solutions of soap or sodium bicarbonate. In describing his method of examination in cases of suspected criminal abortion Dr Grace emphasised the importance of keeping all objects and organs which might be used as evidence.

Dr E CHOMIN LOWE spoke of the difficulty often met with in cases in which death followed self attempted abortion. Frequently there was no evidence of damage to uterus, cervix or vagina, and death had apparently resulted from shock. It was important as Dr Grace had said to collect any fluid in the vagina for sometimes this provided the only evidence of attempted interference. He thought that right-sided pelvic infection should arouse suspicion of interference by mechanical means probably carried out by someone other than the deceased.

Dr W A. MACKAY speaking of the relation between medicine and the law said that doctors were in no sense criminal detectives and when abortion was suspected usually nothing should be done. In case of death however information to the police became a duty.

Mr M DATNOW pointed out that general violence as a cause of abortion must include the associated shock and fright for often severe physical injury did not disturb pregnancy. In experiments on animals he had used many of the well known abortifacient drugs but had never succeeded in bringing about abortion in fact some actually tended to prolong the period of pregnancy. An exception was lead which almost always produced abortion. Mr Datnow did not think that injection of fluids would bring about abortion unless the fluid was injected into the uterine cavity. He drew attention to certain soap pastes which were being extensively used on the Continent to bring about abortion therapeutically.

Mr C H WALSH stated that in his opinion criminal abortion was on the increase. A favourite method was the use of intra uterine injection which left little or no trace whether of trauma or of incriminating material. He agreed with Dr Grace that there was no known drug taken by mouth which would procure abortion without disabling or killing the mother. He instanced the death of a woman lately admitted to hospital moribund as the result of taking an overdose of the female pills so consistently and largely advertised in the daily press.

Congenital Microcolon

Dr W E COOKE and Dr G RONALD ELLIS said that congenital narrowing or obliteration of the intestines was rare and that the incidence of congenital microcolon appeared to be less than 1 in 522 802 post mortems. They had however encountered 2 cases within six months. Both were in males.

The only symptom was vomiting and the condition was diagnosed at exploratory laparotomy. The rectum was examined before operation and was found to be normal in each case. Post mortem the duodenum and jejunum

were empty and flaccid, and the ileum distended with inspissated meconium. Towards the cecum the ileum became less distended. The cecum contained a little meconium but the contents were chiefly cell debris. The colon and in fact the whole canal was patent throughout. The colon contained cell debris but no meconium. No peritoneal bands were present. Microscopically the duodenum and jejunum appeared stretched but the walls and lymphoid tissue seemed normal. The muscular coat of the ileum was hypertrophied. The mucous membrane of the colon was normal but the muscular coat was hypertrophied. In one case the gut had rotated and the colon was in the normal position. In the other the gut had not rotated and the whole of the colon was on the right side.

Many theories had been propounded to explain the condition including peritoneal bands absence of vis a tergo occlusion of the bowel lumen and want of patency of the ileocecal valve and insufficient blood-supply. The probable explanation however lay in defective nerve-supply anatomically the colon was normal. The nerve-supply of the colon from the ileocecal valve onwards to its junction with the rectum obtained its motor fibres from the pelvic visceral nerve (the sacral division of the parasympathetic) and the inhibitory fibres from the inferior mesenteric ganglion (sympathetic). The condition was a lack of relaxation—an achilasia. As Greig suggested the anatomical structure was perfect but the meconium had passed so far and no further because the next segment—in this case the cecum—had never opened to receive it.

Tuberculous Kidney with Giant Ureter

Mr A S KERR and Mr KENNON showed a kidney which was almost entirely replaced by tuberculous caseous material removed from a woman aged 34.

She had had urethral pain and extreme frequency of micturition for two years. There was no hæmaturia but the urine contained thick pus in which many tubercle bacilli were found. On cystoscopy the bladder held only two ounces and the mucosa was much congested. The right ureteric orifice was raised and congested and there were bulles around it. The left orifice appeared normal. Intravenous indigo-carmin was excreted from the left side in good concentration in 4½ minutes but none was seen from the right side in 15 minutes. Uroasclectan showed normal function and appearance on the left side but no dye was excreted by the right kidney. A sample of urine removed from the left kidney by ureteric catheterisation was found to be free from tubercle bacilli. Nephrectomy was therefore performed and it was noticed at operation that the lower four inches of the ureter were enormously dilated and thickened compared with the pencil like upper four to five inches. As much as possible of the ureter was therefore removed.

The interest of the specimen lay partly in the great dilatation in the lower part of the ureter and partly in the fact that within three weeks of the operation the patient was able to retain urine for periods up to four hours and had passed as much as 10 oz in a single act of micturition. The question arose whether the ureteric dilatation was due to destruction of the ureteric orifice and reflux of urine from the bladder or to stenosis of the orifice and excessive internal ureteric pressure. The very rapid reduction in frequency of micturition suggested that there might have been a reflex arc between the diseased kidney and the micturition centres.

Mr CHARLES WELLS said he thought that tuberculous kidney was often associated with dilatation of the ureter. This could be followed in X ray pictures down to the level of the bladder where there was usually a gap between the ureteric and the bladder shadows. This gap was due to the thickness of the

bladder wall and there was little doubt that it was obstruction at the bladder wall which caused the dilatation. This obstruction was first due to spasm and later to fibrosis, which might in time lead to complete occlusion of the orifice. The recognition of spasm as a factor was important because the healthy kidney might often have a dilated ureter from this cause and the existence of dilatation of the ureter alone was, therefore, not a safe criterion of tuberculosis of the corresponding kidney. In treatment the recognition of a dilated ureter was necessary because all such ureters needed to be removed together with the kidney. Nephro-ureterectomy took very little longer than simple nephrectomy and had two strong points to recommend it. First, the removal of the whole of the source of tuberculous

material gave the bladder a very much better chance of rapid convalescence, and secondly, the risk of sinus formation in the wound was greatly diminished. It seemed likely that patients suffering from persistent sinus did so for exactly the reason that they had dilated ureters obstructed at the level of the bladder capable, therefore, of discharging only upwards through the wound.

Mr KERR, Prof R E KELLY, and Mr KENNON reported two cases of *post anal dermoid* and Mr KERR and Mr KENNON a case of *suprasternal dermoid*. Dr T F HEWER and Dr DOUGLAS BIGLAND described a case of *subarachnoid hamorrhage from the circle of Willis*, and Dr ELLIS one of *cerebral abscess associated with bronchiectasis*.

REVIEWS AND NOTICES OF BOOKS

The Public Health Act, 1936

By DAVID J BEATTIE, LL.M., Assistant Solicitor to the Beckenham Corporation. London: Solicitors' Law Stationery Society Ltd. 1937. Pp 503. 40s.

THE vast new Public Health Act, which rewrites the health provisions affecting England outside London, will come into force next October. Those who are accustomed to the geography of the old Acts which it supersedes will have to learn their way afresh. Mr Beattie's book will be found an excellent guide. The case law, so far as applicable for the elucidation of clauses which now reappear in a new context, is faithfully set out. A particularly useful feature is the comparative table which shows in parallel columns the references to repealed enactments and their present equivalents. The departmental committee which reported on the consolidation of enactments relating in the first place to local authorities and local government, and in the second to public health have built themselves an abiding monument in the Acts of 1933 and 1936. As Sir Gwilym Gibbon points out in his foreword to Mr Beattie's book, these Acts represent a new legislative technique. A committee of experts was equipped with a Treasury draftsman. Its draft Bill was not pure consolidation, there was substantial amendment though not of a controversial kind. Judicious changes were made in the course of rendering the old laws more simple, uniform, and concise. These changes were not effected by a separate amending Bill. The committee thus ran the risk, in combining consolidation with amendment, of exposing its draft Bill to the copious and sporadic amendments which private Members of Parliament might casually seek to insert. Fortunately the private Members behaved with noble self-control, and the Bill on which such devotion had been lavished was allowed to pass into law with remarkable swiftness. It is not entirely convenient that separate health codes should exist for London and for the rest of England when there is so much common ground. Part 10 of the new Act (dealing with canal boats) is expressly applied to London. On the other hand the parts dealing with baths and washhouses, with infant life protection, and with the registration of nursing homes have to be duplicated in the parallel new Public Health (London) Act. Some will think that more might have been done to keep the metropolis and the provinces in line. The drafting of the two codes seems to have been by different hands, nor

did one hand always know what the other hand was doing. Thus, when the Public Health Act repealed a number of specified enactments, it was apparently necessary to provide that if any of the repealed enactments were wholly or partly re-enacted in the Public Health (London) Act (which received the Royal Assent on the same day), an Order in Council might declare certain passages in the new Public Health (London) Act to be equivalent to those repealed enactments, and thereupon those passages in the Public Health (London) Act would be repealed too. In the last few days an Order in Council has appeared. This method of legislation may be watertight but nobody can pretend that it makes things easy for the layman. This, however, is not a matter to be blamed on Mr Beattie who has done all he could to enlighten us about the law as it will be next October.

1 Nutritional Factors in Disease

By WILLIAM ROBERT FEARON, M.B., Sc.D., F.I.C. London: William Heinemann (Medical Books) Ltd. 1936. Pp 141. 7s. 6d.

2 Normal Diet and Healthful Living

By W. D. SANSUM, M.D., Chief of the Staff of the Sansum Clinic, Santa Barbara, California, R. A. HARE, M.D., Member of the Staff of the Clinic, and RUTH BOWDEN, B.S., Dietitian of the Clinic. London: Macmillan and Co., Ltd. 1936. Pp 243. 8s. 6d.

1 THIS is an essay which gained for its author the Buckston Browne prize awarded by the Harveian Society of London in 1935. It would be unfair to criticise because it fails as a somewhat superficial survey of a subject which could not be properly dealt with in less than several volumes. At the same time it is difficult to escape the feeling that the author has attempted both too much and too little, for example, the discussion (p. 45) of the relation of protein excess to nephritis is less of a summary than a brief set of references to a series of somewhat contradictory papers. Throughout this essay we have been unable to discover any clear outline of the important conception of conditioned deficiency diseases in which a normal diet fails to give proper nutrition owing to some failure by the body to assimilate or utilise essential food factors. It is the absence of any discussion of this conception that makes us dubious of the author's rationale for his conclusion that there are three main determining factors of nutritional disorder: inherited constitution, physiological strain, and conditions of modern civilisation.

2 The authors of this book have made a practice of discussing questions of nutrition with groups of their patients and have therefore acquired skill in describing the known scientific facts in terms understandable by the layman. They are doubtless justified in their belief that much good has resulted to the patients as a consequence of this education and they have set out here the main facts which their experience leads them to believe should be emphasised in such discussions. Even at a time when far too many books of doubtful value are appearing on questions of diet this one can be recommended as eminently sound.

Bainbridge and Menzies' Essentials of Physiology

Eighth edition. Edited and revised by H. HARRIMON, M.D. So D. M.R.C.P. F.R.S. Professor of Physiology University of London at St. Bartholomew's Medical College. London: Longmans Green and Co. Ltd. 1936. Pp. 651. 14s.

In the preface we read that new chapters have been written on the nutrition of the heart, on the oxygen-carrying power of the blood, on the vitamins on tissue oxidation, on synapses and on pregnancy and parturition. Additional paragraphs have been inserted in many other chapters. The editor has preserved the original design of the work which consists of sixty short chapters chopped into sub-divisions; these rarely consist of more than one paragraph each of the paragraphs having a heading of heavy black type. The length of the paragraphs is the only indication of their relative importance. To the experienced physiologist the book reads rather like a newspaper and does not seem ideally arranged for learning. But a considerable proportion of students have shown that it meets their needs and by some of them in every generation. Bainbridge and Menzies is regarded as a kind of testament. The facts of physiology are to be found in it briefly stated, stripped of much that lends them interest in more leisurely treatises, but undeniably present. There is a type of mind—and here no criticism is implied—which feels safer when adding to its knowledge brick by brick and making certain that each brick is in place before adding the next. The size or importance of the brick does not matter; that is the architect's business. It is sufficient to know that if each one has been faithfully laid in its place the finished structure must be reasonably stable. Bainbridge and Menzies is probably the only English text book which presents physiology in a form suitable for such students and therefore has its own niche. Moreover there must be a large number of students who have studied a larger book who will find it invaluable for revision purposes. If the historical reasoning which lies behind it but finds little place in it, is understood it becomes an excellent manual for reference.

Alltagsorthopädie des Praktischen Arztes

By Regierungsrat Dozent Dr. SIEGFRIED ROMICH. Wien: Aesculap-Vorlag. 1936. Pp. 69. M.2.70.

This little book sets out to cover in 50 pages the whole field of orthopaedic practice as it affects the general practitioner. It is surprising that the attempt should have succeeded to such a measure. In a short introduction Prof. Spitzzy points out that while each specialist has leisure to play in his own backyard

ephemeral controversies have little interest for the general practitioner what he wants is undisputed facts of practical value. He is provided here with insight into the nature of orthopaedic conditions and into the difficulties that are likely to be encountered in their treatment as well as with suggestions for simple measures to which the commoner types respond. For example the author shows that functional inefficiency depends not only on the structure of the organ but also on the ratio of the demands made on it to its inherent strength, a point frequently overlooked in practice. Either the low arched foot or the cavus foot may become painful when subject to excessive strain but each needs a different type of shoe and height of heel. Arthrosis deformans, again the non-infective form of joint disease due to slow wearing out of the joint tissues, will develop in any patient who lives long enough but may occur in early adult life as the result of abnormal strain as in an unreduced congenital dislocation. In regard to hallux valgus the author reminds us that this is always a symptom of flat foot, and protests that the fashion of putting such minor operations as its correction at the end of a long list and leaving them to an inexperienced operator accounts for some at least of the unsatisfactory results obtained. The surgeon tends to forget that what is minor to him is a major disability to the patient. In connection with surgical tuberculosis the wise observation is made that all these cases run a natural course of invasion and healing which can be modified but not reversed by treatment; the measures applied in the first stage may diminish but will not eliminate tissue destruction while any form of treatment applied during regression is likely to acquire more credit than it deserves.

In the final chapter on plaster of Paris the modern controversy on the relative merits of padded and unpadded plasters is disposed of by the shrewd comment that both are bad when badly applied while either is efficient in expert hands. Prof. Spitzzy emphasises the part which general practitioners can play in the early diagnosis of crippling conditions and in directing them to centres for efficient treatment while he reminds us of the economic importance of flat foot and rheumatism as sources of disability in the working-class population even amongst adolescents. An English translation of these crisp pithy chapters would be welcome.

Cunningham's Text-book of Anatomy

Seventh edition. Edited by J. C. BRASH, M.A. M.D. F.R.C.S. Edin. Professor of Anatomy University of Edinburgh and E. B. JAMISON, M.D. Lecturer on Anatomy in the University. London: Humphrey Milford Oxford University Press. 1937. Pp. 1596. 42s.

SOME years have gone by since the last issue of this famous text book saw the light. In the interval Prof. Robinson has retired from the chair of anatomy at Edinburgh; this edition is in the joint charge of his successor and his experienced senior assistant. The book is now produced in the new English (B 1) revised terminology and is thus in line with the latest anatomical treatises. Since the list of contributors was printed we observe that two of them have died: Prof. Francis Dixon and Sir Grafton Elliot Smith, the former after he had finished his revision of the classical section on the urogenital system. The section on the central nervous system from the masterly pen of Sir Grafton Elliot Smith remains as a monument

to his erudition, with some little additions and alterations made by him and others by his associates, Dr Una Fielding and Prof A Durward. Most of the contributors to this edition are new, and they have reason to be proud of the book they have produced, it is a great work, worthy of the place "big Cunningham" occupies in the forefront of anatomical literature. Much added material in the text and several figures and radiograms have been included in a book which, in some indefinable way, seems less formal than its predecessors in the treatment of matters anatomical, and this is all to the good.

Synopsis of Surgical Anatomy

Third edition By ALEXANDER LEE MCGREGOR, MCh Edin, FRCS Eng, Lecturer on Surgical Anatomy, University of Witwatersrand, Assistant Surgeon, Johannesburg General Hospital, Bristol John Wright and Sons, Ltd, London Simpkin Marshall Ltd 1936 Pp 664 17s 6d

CERTAIN additions and changes have been made in this third edition, and the general character of this excellent little book maintains a high standard. We would like to see some notice taken of the sexual difference in ossification times and fusions, and indeed in some other respects, but that is the only criticism we can make.

Modern Discoveries in Medical Psychology

By CLIFFORD ALLEN, MD, MRCP, DPM, Psychotherapist to the Institute of Medical Psychology London Macmillan and Co, Ltd 1937 Pp 279 8s 6d

THE author of this introduction to modern psychological medicine has systematised his exposition by showing the progress of psychopathology through the history of the personalities who have made the leading discoveries. Mesmer and the work of his followers, Liebaux and others, are first considered in relation to hypnosis. The contributions of Janet and Morton Prince to the structure of the mind show us how the modern theories of the unconscious were made clear in the study of hysteria and multiple personalities. Neither of these celebrated clinicians went beyond superficial analysis of personality, and their treatment was largely suggestion and hypnosis with a view to reintegration. Prince, however, is shown as preparing the ground for an understanding of Freud inasmuch as he recognised the importance of emotional disturbances as precipitating factors. Freud naturally comes in for the lion's share of the book and a mead of praise which could only have been given by an ardent devotee whose exposition is however simple and accurate. Alfred Adler and C G Jung do not arouse Dr Allen's admiration. The former is regarded as superficial and his organ jargon as nothing more than an extension and perhaps an exaggeration of a Freudian concept. Jung's theory of types and his concept of the collective unconscious receive proper attention but are perhaps rather too easily dismissed as tending to mysticism. Kretschmer's theories on the relation of body and mind and their connexion with clinical types are treated somewhat superficially. The book closes with an appreciation of Pavlov which is warmer than one would have expected. Pavlov and Freud are made to stand out as the two great figures in modern clinical psychology. Both have their roots in biology, and their divergences would appear to be due to

little more than differences of language expressing ultimately the same Determinism.

This is a volume that can be safely placed in the hands of the student of psychopathology provided that his critical faculties will not be blinded by the bright light of the author's partisan enthusiasm.

Common Sense and Psychology

By ALAN MABERLY, M.A., M.B. London Frederick Muller 1936 Pp 160 5s

Dr Maberly has contracted into a small space a considerable amount of information regarding modern theories of psychology with particular regard to the personality and his disturbances. In a brief space he attempts, however in a popular fashion, to explain mental mechanisms, the significance of sex, and the relationship of parent to child. Common sense is certainly the mainspring of this book, and the author has in large measure succeeded in avoiding the complexities of modern theories. Unfortunately in the last chapter, which deals with fear and guilt, he has not been very successful in coming to grips with this central problem of modern psychopathology.

The book could be read with profit by an intelligent layman, and by doctors who have so far not taken much interest in medical psychology.

Allergic Diseases

Their Diagnosis and Treatment Fourth edition By RAY M. BALYEAT, M.A., MD, FACP, Associate Professor of Medicine and Lecturer on Diseases due to Allergy, University of Oklahoma Medical School. Assisted by RALPH BOWEN, B.A., MD, P.A.A.P. Philadelphia F A Davis Co 1936 Pp 516 5s 6d

THE physician studying allergy is apt to be appalled by the complexity of the subject, and perhaps dismayed by a certain lack of precision, though not always of confidence, when he consults the expert. He may wonder how much he may rely for instance on such methods as skin testing, or on trial diets in the detection and elimination of allergens. Dr Balyeat's book offers him a full account of this difficult subject, copiously illustrated by pictures and case records. This edition includes several new chapters, among them the use of intratracheal iodised oil in the treatment of obstinate asthma, which the author finds valuable in combination with other measures.

We read in the preface that the primary aetiological factor in migraine is usually food sensitisation. The evidence supplied is hardly convincing. Of the author's cases about one half gave a positive reaction to foods on skin testing, but many foods that gave a definite skin reaction seemed to have no clinical significance in relation to migraine, and other foods whose ingestion was followed by attacks of migraine gave no skin reaction, further a reaction to a suspected food might be negative when tested in one area of the skin and positive in another. One of the five cases recorded was found to be sensitive to twenty-two foods, elimination of which has been followed by freedom for eight months except for two attacks.

This book is written primarily for the general practitioner, but contains a wealth of technical detail which the specialist in allergy will be able to sift to greater advantage.

THE LANCET

LONDON SATURDAY APRIL 3 1937

THE SALE OF NOSTRUMS

LEGISLATORS in the United States are preparing measures for the stricter control of the medicine trade. If they are successful, there will be fresh hope for similar provisions in our own country where a select committee of the House of Commons has lately produced a report¹ on the medicine stamp duties. Although the select committee viewed our problems from the fiscal angle only the report mentions that there was, incidentally authoritative evidence that the poorer and less well-educated classes of our people spend more money than they can afford on remedies of little or no efficacy with an accompanying danger to health as a result of their not seeking medical or surgical treatment in time. These deliberate comments on the obsolescence of the medicine duties and on the exploitation of the public by the appeal to fear merely repeat what has often been officially recorded before. But as the debate on the Medicines and Surgical Appliances (Advertisement) Bill showed a year ago the Parliament at Westminster is liable to discount this kind of advice as a sinister and self interested attempt by registered medical practitioners to deprive poor sufferers of the really valuable advantages of unorthodox medicine.

There are now before the legislature of the State of New York proposals which resemble and improve upon Mr. Duckworth's Bill of last year. The measure proposes to set up a Consumers Bureau in the New York department of health with powers to refuse the registration of any proprietary food or drug and to control the advertising of such articles. The manufacturer will not be allowed registration unless he submits the complete formula of his product if this bureau deems it potentially injurious registration will be refused. This Consumers' Protection Bill as it is named will also prohibit any representation of palliative or therapeutic effect on any of a list of 42 diseases and will curb the extravagant claims displayed on labels or in advertisements of any kind. Meanwhile two other Bills are pending in Congress thus the problem is being attacked both in the federal and in the several States legislatures. It is unwise to dogmatise about American statutes and their prospects. Wide legislative powers were left in the hands of the several States when the historic constitution was framed in the seventeenth century. Limited powers (of which inter state commerce is concerned) were permitted to the federal legisla-

ture. A great part of the time of the supreme court of the United States is devoted to deciding the validity of laws where one legislature is alleged to have trespassed into the domain of another. One of the functions of the federal government is the Post Office federal powers can therefore be used to suppress mail order frauds by "closing the mails" to quack remedies much in the same way as our own Post Office can restrict the postal traffic in Irish Free State sweepstake tickets and literature. In America the National Food and Drugs Act of 1906 requires that the patent medicine package must declare the presence and amount of eleven specified drugs, if the package contains an advertisement of healing powers which is demonstrably false the Government can intervene. Dr. A. J. CRAMP in the introduction to the third volume of his *Nostrums and Quackery* reviewed in our columns a fortnight ago pointed out to his fellow countrymen the shortcomings of the Act of 1906. It deals with advertising only on or in the trade package, not with collateral advertising in newspapers or on hoardings or by wireless publicity. It requires the declaration of only eleven out of thousands of drugs. It confines the word drug to substances used for the cure or alleviation of disease and thus it exempts cosmetics which may often contain dangerous drugs. Dr. CRAMP has hinted that the business slump of 1929 has made the moment less propitious for sterner legislation against quack remedies. In times of prosperity he suggests reputable journals may exercise a rather rigid censorship of medical advertising. When hard times come the standard is lowered. Many newspapers and magazines which helped to educate public opinion and to secure the passing of the 1906 Act are said to have been recently willing to admit advertisements of patent medicines to their columns where once such matter would have been unwelcome. He puts a high estimate on the money spent in advertising campaigns. A maker of patent medicines is quoted as having said that this expenditure amounts to nearly one half of the manufacturer's costs. The United States newspapers are said to derive more profit from the advertisement of quack medicines than the makers themselves from the manufacture. Sentimental statements that patent medicines are the poor man's medicine omit to tell the poor man how large a part of the price of the alleged remedy has been spent in convincing him that he suffers from something which it is sure to cure.

The two Bills now before Congress according to a recent summary in the *Journal of the American Medical Association* propose to regulate the inter state commerce of devices for the diagnosis and cure of disease in man or other animals or devices affecting any function of the body. Both Bills propose to prohibit the advertisement of such persons other than the medical profession of any drug or device represented as having a therapeutic effect upon Bright's disease, cancer, tuberculosis, infantile paralysis, venereal diseases, and heart vascular diseases. If this prohibition is carried

both by the federal and State legislatures of America, it will be no small encouragement to revive the similar proposals to which the Parliament at Westminster refused a second reading last year

CEREBRAL GLIOMAS

WHEN making a diagnosis of cerebral tumour the neuro surgeon endeavours to answer three questions. Is a tumour present? Where is it situated? What is its histological nature? Correct answers may be given to the first two questions in a very high proportion of cases, but the third one is a much more difficult one to answer. In an account of his experiences with 100 cases of glioma of the cerebral hemisphere, Prof L. PUTSEPP discusses¹ these aspects of diagnosis. He divides his cases into three categories, according to their clinical evolution, and each group is correlated with the operative findings. In 45 cases the symptoms and signs developed in a slow and progressive manner, which is considered to indicate a benign lesion, in 32 of these the tumour was an astrocytoma. The next group (number unstated) includes those in which the symptoms developed in paroxysms, with periods of amelioration. In three-quarters of these a cystic tumour was found at operation. Prof PUTSEPP believes that aggravation of symptoms is due to hæmorrhagic infarction of the tumour, and recession follows cystic degeneration of this area. Some authorities are more inclined to associate cyst formation with an exacerbation of symptoms. Group three consists of cases with an "acute" history, in these the tumour was soft and ill defined, typical of spongioblastoma multiforme. Oligodendroglioma is also placed in this category. This tumour has long been regarded as benign and of slow growth, tending to calcify, but from a study of its natural history it is clear that eventually it may acquire malignant characteristics, and in some areas its histological picture may be very like that of a spongioblastoma multiforme.

To distinguish between glioma and meningioma the following investigation has been found valuable. If the patient with a suspected glioma is given an intravenous injection of hypertonic saline the general symptoms (headache and vomiting) are likely to improve, but the focal signs to persist or even to be aggravated if the diagnosis is right. If the tumour is actually a meningioma focal signs as well as general symptoms will show improvement. Prof PUTSEPP avoids the partial removal of a glioma, believing that this procedure leads to activation of the remaining portion of the growth. If by reason of its location the tumour cannot be entirely removed, he employs a two stage "physiological" method. At the first session the brain is incised until the tumour is exposed, the bone of the osteoplastic flap is removed, and the wound closed. Two or three weeks later when the flap is again reflected, the tumour will be found to have migrated nearer the surface of the brain. Total ablation of the tumour can then be effected with

minimal sacrifice of healthy brain. The bone of the flap is also removed as a routine measure when the tumour is "soft"—i.e., spongioblastoma multiforme, for this provides ample decompression in the event of a recurrence of the tumour. When a cystic tumour has been dealt with, a small portion of the overlying bone is removed so as to form a window. Any further collection of fluid can easily be aspirated through this opening. For those cases in which the tumour cannot be removed, decompression is obtained by performing an extensive craniectomy immediately over the tumour. The classical subtemporal decompression is never utilised, for in PUTSEPP'S view the other procedure gives a much better result. Various arguments are offered in support of "focal" decompression, and these are considered to outweigh very considerably the disadvantage of disfigurement.

It is unfortunate that though many figures are given in this article they are difficult to follow, being set out partly in actual numbers and partly in percentages. This is especially disappointing where late results are under discussion. For example, of the 28 cases of astrocytoma 3 are still alive 10–12 years after operation, and apparently 8 survived 4–6 years. These figures compare favourably with those given by CAIRNS in his recent survey of the ultimate results of operations for intra cranial tumours. The vast majority (86 per cent) of patients operated on by Prof PUTSEPP for spongioblastoma multiforme died within a year of operation. Some of the patients with this type of tumour were decompressed and the tumour treated by deep X radiation. These showed a very slight gain in longevity as compared with those in which a radical removal of the tumour was attempted. The opinion is given that the functional results also were slightly better in those cases treated by radiation.

INHERITANCE OF RESISTANCE TO INFECTION

IN recent years much work has been done, especially in America, on the problem of the inheritance of resistance or susceptibility of laboratory animals to different bacterial and virus infections. The accumulated data were summarised and reviewed in 1934 by A. BRADFORD HILL in a report to the Medical Research Council.¹ HILL concluded that between strains of the same species differences in mortality from specific infections had been shown to exist, which could be ascribed to differences in genetic composition, that within strains selective breeding had given results which, in some respects, lacked uniformity and made interpretation difficult, but in general led to the conclusion that resistant and susceptible lines could be developed, and that the factors for resistance were dominant to those for susceptibility. How far these factors were specific, giving immunity to only one infection or to similar types of infection, how far they might extend their influence over a

¹ *Bruz. méd.* Jan 31st, 1937, p. 491

¹ *Spec. Rep. Ser. med. Res. Coun. Lond.* No. 196

wide range of dissimilar harmful agents was a problem to which the available evidence gave no conclusive answer

One of the most assiduous workers in this field has been LESLIE T WEBSTER of the Rockefeller Institute for Medical Research. In his earlier work and in that of other investigators the development of resistant stock was based upon breeding from survivors to infection. An objection to that procedure has been raised—namely that the progeny may prove more resistant to the infection because of their selection through mortality resulting through infection conveyed by the previously infected parents or by a transfer similarly conveyed of an active or passive immunity. Elaborate tests have been made which show that such factors are not likely to be the whole explanation of the enhanced resistance of the progeny but the probability remains as WEBSTER himself admits, that the persistent infection is a factor in raising the resistance of the tested offspring. In his later work WEBSTER has carefully avoided this difficulty by breeding again from uninfected parental stock whose first litters have been proved to be very resistant or susceptible to various infections. By this means he has developed lines of mice which differ widely in their reactions to different agents. In a paper recently published² he gives an account of the position which has been reached in this way and also full details of later tests with a variety of bacterial and virus infections. By rigid selection testing and discarding procedures on over 13 000 mice for 12 generations from 1930 to 1934 three main inbred lines reacting with reasonable uniformity have been produced. The first of these is very susceptible to infection with *B. enteritidis* and practically all mice of the latest generations succumb to the test dose with this organism; they are also susceptible to an induced virus infection (encephalitis St. Louis type is employed) and 80-90 per cent die at test. They are termed bacteria-susceptible virus-susceptible. The second line appears to be equally susceptible to the bacterial infection but are resistant to the virus for less than 10 per cent succumb to the test with it; they are termed bacteria-susceptible virus-resistant. The third line shows considerable resistance to *B. enteritidis* 17 per cent dying at test but nearly all succumb at the test with virus; they are termed bacteria-resistant-virus-susceptible. A fourth line resistant to both bacterium and virus is at present being developed.

The first three lines have given sufficiently stable mortality rates for it to appear likely that cross breeding and back-cross experiments would allow the mechanism of inheritance to be analysed and the results of such tests are now reported. They support the conclusion previously reached that with the infecting agents used resistance is dominant over susceptibility; the factors do not appear to be sex-linked and those regulating resistance to *B. enteritidis* are not related to those regulating resistance to encephalitis virus. Finally

the tests indicate that the mechanism of this inheritance may be relatively simple for the mortality rates of the F_1 , F_2 and back-cross mice approximate roughly to those expected on the basis of two single factor crossings. It seems however that the type of general title given to the lines—e.g. bacteria-susceptible virus-resistant—may be somewhat misleading. All the lines appeared equally (and highly) susceptible to a strain of mouse passage rabies virus so that the factors involved may be more narrowly specific than the titles suggest. The nearest approach to a solid immunity is a virus-resistant strain of which only 18 out of 209 died at test.

The work here reported has clearly and inevitably been laborious for large numbers of mice of each generation in each line and the cross breeding experiments must be bred for valid conclusions. Also complications creep in environmental influences are difficult to control and changes in mortality rates sometimes take place which cannot be readily explained and are attributed to unknown environmental causes. WEBSTER has done much to overcome these difficulties; his present paper is an addition to the subject matter that well deserves careful study.

MORPHIA AND BILIARY COLIC

It is astonishing how little we still understand about that commonest of symptoms pain. An investigation that succeeds in defining any single type of pain and displaying its mechanism is therefore always welcome and valuable. BURSON, MCGOWAN, and WALTERS, of the Mayo Clinic^{1,2} have by very simple methods thrown light on a variety of pain which may arise in the biliary tract after cholecystectomy and which naturally brings disappointment to both patient and surgeon. A T tube left in the common bile-duct for post-operative drainage was connected by means of rubber tubes and a Y junction to a manometer and a reservoir and the system filled with saline. When the reservoir was raised the manometer recorded the pressure existing in the biliary tract and in one case a clear association could be demonstrated between rise of pressure and attacks of pain in the upper abdomen extending round the costal margin and to the abdominal blade. A means of relieving this pain was found namely morphia. This was shown by tests in 1914 to increase the ease of the pain. Oddi. In fourteen experiments the administration of a grain of morphia caused a pressure fall in 2-3 minutes and reached a plateau of 20 to 25 mm. in 10 to 15 minutes. During the fall and fall 2 minutes generally then it rose slowly away as the patient's condition improved on the coast. The next pressure lowering dose was given 15 to 20 minutes later.

communicate with the rest of the system it could be raised by hand until a head of pressure was attained, sufficient to force the sphincter of Oddi, when saline flowed through the tubes and into the duodenum. The head of pressure required was a measure of the tightness of sphincteric contraction, and the method showed it to be much higher after morphia than before it. Confirmation of this finding was obtained by injecting radio opaque oil into the common bile duct, and photographing it. Before morphia was given, the oil would fill the common duct and pass in considerable amount into the duodenum, after morphia, however, the injection would force oil up into the hepatic ducts, which with their tributaries appeared clearly outlined on the films while the duodenum remained almost or quite empty.

Codeine and Dilaudid, like morphia, produced a spasm of the sphincter of the common bile-duct.

The experiments are few but their results are so striking that they should make us think twice about giving opium alkaloids to patients with post cholecystectomy colic. Then what shall we give? The authors have further tracings showing a sharp and satisfactory fall in the pressure inside the bile duct as soon as amyl nitrite is inhaled, or shortly after glyceryl trinitrate is placed under the tongue. These were much more effective in relaxing the contracted sphincter than many other drugs tried, and they also brought relief of pain. This piece of work is a neat example of how the physiologically minded surgeon can turn to good account the opportunities that surgical operations afford.

ANNOTATIONS

THE SIGNIFICANCE OF ANTIFIBRINOLYSIS

Tillett and Garner's observations on the fibrinolytic activity of streptococci, and on the development of resistance to this action, opened a new field in the study of streptococcal infection. They themselves showed that plasma clots from patients convalescent from known infections by *Streptococcus pyogenes* were highly resistant to lysis by cultures of this organism, and it was not long before others extended this method of study to conditions of more doubtful nature. Hadfield, Magee, and Perry¹ were the first to show that resistance to fibrinolysis was developed during the course of rheumatic fever, an observation which has since been confirmed by others, and now forms part of a serological argument fundamental to the conception that rheumatic fever is an allergic reaction to streptococcal products. Some observations now published by Waaler² are interpreted as questioning the validity of this conclusion, on the ground that the development of antifibrinolysin appears not to be a strictly specific reaction. This study embraced in the first place 31 cases of apparently infective polyarthritis of various types, and in half of these resistance to fibrinolysis was developed and varied in degree with the activity of the disease, as has been observed in rheumatic fever itself, an exception was afforded by 5 cases of Still's disease, all of which gave negative reactions. In this there is nothing inexplicable or inconsistent with existing belief since other antibodies to *S. pyogenes* have been found in the serum of patients suffering from multiple arthritis. But Waaler has also found increased resistance to fibrinolysis in patients suffering from bacterial endocarditis demonstrably due to streptococci of other types, four being *S. viridans* and one *S. faecalis* and in two patients with the most pronounced reactions there was not even a history of rheumatic fever. He concludes from this that the reaction is non specific and must not be accepted as evidence of infection by *S. pyogenes*. This conclusion is open to criticism on two grounds. One concerns the reaction itself: the question here is the interpretation to be placed on a certain degree of resistance, and those who have worked with this test have found it difficult so to standardise conditions as to place reliance on much more than a simple positive or negative result. The other concerns the

nature of his five cases of bacterial endocarditis. In spite even of a negative history, the probability is that they had their origin in a rheumatic endocarditis, and since it has been found by Von Glahn and Pappenheimer³ that active rheumatic lesions in the form both of bacteria free vegetations and of Aschoff nodules in the myocardium may still exist at the time of death from bacterial endocarditis, it cannot be assumed that the rheumatic process is in these cases simply a thing of the past.

THE OLD ASHMOLEAN MUSEUM

AMONG the various good causes in Oxford which may get help from the appeal which the university has lately made we hope sympathetic consideration will be given to the Old Ashmolean or, as it is now called, with a sad loss of elegance as well as historical interest, the Museum of the History of Science. The building, inside and out, is one of the loveliest in Oxford, built by an unknown architect at the end of the seventeenth century to house the miscellaneous collections of Elias Ashmole and the Tradescants. Part of the building housed the first chemical laboratory, and was the meeting place of the early scientists. It was in one way and another neglected and deteriorated, some of the exhibits disappeared, and the proctors ordered a mouldering dodo to be burned, though happily its head and legs survived. But in the last 20 years there has been a renaissance. Dr Lewis Evans gave his unrivalled collection of mathematical instruments, and Mr R. T. Gunther, LL.D., entered on his enthusiastic curatorship which ordered what was there and found much else of great interest and historical importance in the cellars and attics of various colleges, once the museum took life again, gifts and loans came in abundance. As our readers will remember Dr Gunther has also published a series of volumes on the early history of science in Oxford. As has always happened, science and medicine were in the early days more intimately associated than they are now, and there is a great deal of medical interest in the museum—old pharmacists' cabinets with the drugs waiting to be critically examined, microscopes, a Valentine's knife, phlebotomist's gear, perflatory spoons for administering cod liver oil, and much else that appeals both to the curious and to the serious student. The present trouble is that Dr Gunther's curatorship has been

¹ Hadfield, G. Magee, V. and Perry, C. B. (1934) *Lancet* 1 834.
² Waaler, F. *J. clin. Invest.* January 1937 p. 14.

³ Von Glahn, W. C. and Pappenheimer, A. M. (1935) *Arch. intern. Med.* 55 173.

so successful that the museum has hopelessly outgrown its accommodation which is limited to the topmost of the three floors of the building of which it needs the whole. The bottom and middle floors are occupied by the Bodleian Library and by the lexicographers who are engaged on a new edition of Lewis and Short. If these can be moved elsewhere which should not be difficult the Old Ashmolean will at comparatively small cost be able to blossom out into what it is quite ready to be—one of the most attractive institutions in the university.

HISTAMINE AND RENAL LESIONS FOLLOWING SHOCK

SINCE the circulatory depression resulting from injection of histamine is likely to diminish the secretion of urine Bjerring¹ has investigated the fall of blood pressure and the reduction of the urea and creatinine clearance that follow injection of histamine. He finds that the reduction of the renal function is not always proportional to the fall in blood pressure, and he concludes that histamine must have some direct action on the renal blood vessels. It is to be noted however that the experiments were done on patients suffering from various diseases that might modify the findings. In a further paper Husfeldt and Bjerring² describe two cases of patients dying in uræmia eight days after receiving severe injuries. Post-mortem section of the kidneys showed absence of blood from the glomerular tufts and some degeneration of the tubules. On the histological appearances the authors dispose of trauma to the kidneys or incompatible blood transfusion as causes of this lesion and they suggest that it is due directly to defective renal circulation during shock. They mention that histamine may cause albuminuria as well as deficient function. Adrenaline and Ephedrin (synthetic ephedrine) may also produce albuminuria and it is interesting to note that signs of renal damage did not develop fully until three days after the injury with a rising blood pressure indicating vasoconstriction.

PAY BEDS IN LONDON VOLUNTARY HOSPITALS

THERE are many people able and willing when they are ill to pay the cost of maintenance in a hospital as well as a reasonable fee for medical attendance but who cannot afford the usual charges of a nursing home. In many of the London voluntary hospitals beds are now available either in cubicles, single rooms or small wards for persons of moderate means. The number of such pay beds has increased from 590 in 1920 to 2112 last year and details are given in the new edition of a list³ issued by King Edward's Hospital Fund for London. Medical and surgical fees are not as a rule included in the weekly charge: they are arranged between patient and consultant, or more commonly through the family doctor. The normal weekly charge as given in the list does not include anaesthetist extra nursing exceptionally expensive drugs or dressings treatment by electricity or light, radium or X rays, pathological examinations or operating theatre expenses. The list calls attention to the two contributory schemes which facilitate for all parties the use of these pay beds. For persons with incomes not exceeding £5 a week (for a married man with children under 16) there is the Hospital Saving Association for persons whose incomes exceed this limit there

is the British Provident Association. A number of societies approved under the national health insurance scheme also provide hospital treatment for their members. It is difficult to state precisely how many approved societies do so for quite a number of them exclude women from hospital benefit and others only pay in respect of members who were in the society during a more spacious time when money for this purpose was accumulating. A useful list of these societies and of the limitation in the benefit provided has just been issued⁴ by the Central Bureau of Hospital Information.

FREEZING AND THAWING THE TISSUES

WE are familiar in this country with the work of Sir Thomas Lewis on the reaction of the tissues to local injuries and with Sir William Bayliss's humoral theory of secondary shock. The former demonstrates the liberation of a histamine like substance at the site of injury and the latter postulated the dissemination of a chemical substance from areas of massive injury causing a general loss of plasma from blood vessels to tissues. A similar condition was brought about by histamine and "histamine shock" and secondary surgical shock were thought to be identical. Nowadays this interpretation of secondary shock has been practically discarded with the reservation that it may account for some features of the condition. A view which is gaining ground, chiefly due to work from America is that the loss of fluid from the circulation can be sufficiently accounted for by exudation into the injured tissues themselves. The original experiment of Cannon and Bayliss⁵ who occluded the circulation to an injured limb and stated that shock was absent until the circulation was released has not, it is said been satisfactorily repeated. This is curious for if the modern theory is correct loss of fluid from the blood stream into the injured tissues could not take place unless these were included in the circulation and if they were temporarily excluded it would be reasonable to expect shock to occur on restoration of the blood flow.

There seems no doubt, however that extensive local injury can abstract sufficient fluid to concentrate the blood as much as 50 per cent and lower the blood pressure to about 80 mm Hg in experimental animals. This has been confirmed by H. V. Harkins and P. H. Harmon⁶ of Chicago for injury by freezing in anaesthetized dogs and they say that the exudate resembles blood plasma very closely in composition. They also point out that although this brings freezing into line with burning and mechanical injury the exposure to extreme cold of sufficient of the body to produce shock in the human would bring about death from other causes.

Their communication is interesting from a more immediately practical point of view in that it casts doubt on the traditional conservative treatment of frozen tissues. The evidence they have collected up to the present suggests that rapid thawing is no less effective and no more harmful than slow thawing. Their criterion is the extent of gangrene and so forth in narcotised animals but in ordinary therapeutics the factor of pain would have to be taken into account and might well be decisive in determining which treatment to adopt. This again brings us back to the question of shock. It has been shown in Cannon's laboratory that repeated injections of adrenaline will ultimately cause a fall of blood pressure and increased blood concentration. This is supposed to

¹ Bjerring T. (1937) *Lets med.* **91**, 207.

² Husfeldt, L., and Bjerring T. 1936 p. 279.

³ Copies may be obtained from Messrs George Barber & Son Ltd., Farnhill street 1, C.A. 24, post free.

⁴ Memo No 108 from the director of the Bureau of Governor-General, London S.W. 1, 4d.

⁵ *Ann. Intern.* 1927, **14**, 213.

be a result of continued peripheral vasoconstriction with consequent asphyxia and increased permeability of the capillary walls. Yet another theory of shock emerges from this work to account for those cases in which trauma is absent, though if established it would apply equally to traumatic cases. It is postulated that a sudden intense stimulation, such as an explosion, might overstimulate the sympathetic-adrenal system and bring about the same results as persistent administration of adrenaline. The possibility of a general effect in severe local injury is therefore reintroduced, and it seems that the final picture of secondary shock might closely resemble the condition described by Bayliss, although he was at fault in the interpretation of his experiments and regarded nervous effects as having been excluded.

ANTECEDENTS OF PYORRHOEA

At a meeting of the odontological section of the Royal Society of Medicine on March 19th, to which the Birmingham Odontological Society had been invited, Dr Wilfred Fish reviewed the local and general effects of oral sepsis in the light of Okell and Elliott's observation that tooth extraction may cause transient bacteraemia, and the further conclusion, by Maclean and himself, that streptococci and other organisms in pyorrhoea are normally confined to the periodontal sulcus and do not actually invade the tissues.¹ Thus situated, he believes, such organisms may produce disease by the diffusion of toxic products into the local tissues or by the further dissemination of soluble toxic matter into the system generally. Alternatively both local and general diseases may follow the actual traumatic introduction of the organisms themselves into the blood stream by extraction of the tooth, or even by chewing hard food.¹ This bacteraemia associated with tooth extraction or with mastication is likely to be harmless unless the organisms are arrested somewhere in circumstances favourable to their growth. They may, for example, be entrapped in a vessel of the alveolar bone by bruising with the forceps during extraction, or a slight blow on a bone, such as the tibia, at a moment when organisms happen to be circulating in the vessels concerned might also imprison the germs and leave them to multiply and produce osteomyelitis, or, again, as Okell and Elliott pointed out, they may attack the fibrous vegetations of a simple endocarditis. To prevent this last catastrophe, Dr Fish holds that no dead tooth should be extracted from a patient with endocarditis and even a live tooth should be removed only when there is urgent necessity, and only after careful crutisation of the periodontal sulcus. He recommended that patients with simple endocarditis and also much chronic gingivitis should keep to soft food. They must not brush or rub the teeth and gums, since this also causes a bacteraemia, and the only permissible treatment is to dress the gum margins very gently with a paste of zinc oxide and oil of cloves which is carried on wisps of cotton wool into the periodontal sulci and left there for several days. This eliminates pus from the pocket. The local effect of toxic absorption from the pocket is eventually 'pyorrhoea'—a breakdown of bone and fibrous tissue which deepens the pocket and loosens the tooth. But Dr Fish was at pains to explain that it is by no means necessary to extract the teeth in order to prevent both the toxic absorption and bacteraemia since the organisms are living on the surface in the periodontal sulcus. Pyorrhoea, he

maintains, can be cured by cutting away the pockets in which the organisms grow and afterwards rubbing the surfaces of the gum to harden and hornify them, thereby preventing toxic absorption. "In this way the patient keeps his teeth, gets a clean mouth instead of a dirty one and is safe from the remote effects of oral sepsis." It is useless on the other hand to extract a few dead teeth or teeth hopelessly loosened with pyorrhoea and leave infected gum margins round the rest. Every gum margin histologically examined by Dr Fish has shown some degree of chronic inflammation, and every patient suffering from toxic absorption should in his opinion have a careful toilet of the gum carried out on the remaining teeth in addition to the extraction of any that are hopeless. Only thus can accurate clinical conclusions be drawn concerning the effects of oral sepsis on the general health.

IN MEMORY OF ALFRED KEOGH

THE Army Council have decided to name the new barracks in the course of construction for the R.A.M.C. Depot and Army School of Hygiene at Aldershot the "Keogh Barracks" in memory of Sir Alfred Keogh, who was Director General, A.M.S., from 1905 to 1910 and again during the late war from 1914 to 1918. That Keogh's memory should be kept alive by the Army Council, and indeed by us all, is right. No one man ever did so much for the Service which he ornamented, and to which during the war the country owed so great a debt. He was the first to see that wherever connexions could be established between the civilian and military doctor, the advantage would be great and direct. During his first term as D.G.M.S. he visualised how civilian medicine could be made to coöperate with the R.A.M.C., not only in times of peace but in times of emergency; and when those times arrived with a world war a comprehensive plan was already in existence to meet the enormous difficulties of the medical department of the Army. Without Keogh's prevision vast tragedies might have occurred. He had looked forward with an uncanny anticipation, so that he was able to gather round him from the beginning of the struggle a fine personnel organised from civilian doctors and representative consultants, and to find material for special war hospitals. The foundation of the R.A.M.C. College represents only a part of what the Service owes to Keogh. His large performance was to utilise the medical knowledge of the country with intelligence and economy during a period of tremendous strain, if similar strain occurs again, this country knows, mainly thanks to Keogh, how it can best be met.

"EPILEPSIA"

THE case for international coöperation is nowhere stronger than in the field of medical research. In various ways, and in different countries, the problem of epilepsy, for instance, is being attacked by individual neurologists, psychiatrists, biochemists, and social workers, but want of knowledge of the activities of others and lack of any coördination has hampered progress and rendered valueless many good pieces of individual work. For four years before the late war an international league existed to promote coöperation among medical men who were interested in epilepsy and to broadcast information about what different countries were doing. After twenty years of inactivity this league has now been resuscitated and we have received the first number of its new journal *Epilepsia*, which will be published in future, at least once a year, under the editorship

¹ See *Lancet* Jan 2nd 1937 p 31

of Dr H I Schou of Denmark.¹ The journal is printed in English and the story it tells is a hopeful one. The League has made a good start with a membership of about 260 and already there are flourishing branches in America Scandinavia and Great Britain with promise of more to be added shortly. The first number of the journal is necessarily introductory in character. The outstanding feature is an able survey of the problem of epilepsy and the means of attacking it by Dr W G Lennox of Boston the president of the League. Dr L J J Muskens of Amsterdam discusses the ideal facilities for the treatment of epilepsy emphasizing the need for special hospitals at which all incipient cases should receive thorough investigation. Some account is given of the facilities for the residential treatment of epileptics that now exist in different countries and many of us will find useful the detailed and complete list of institutions for epileptics in Great Britain. It is hoped that future numbers of the journal will contain a résumé of research work carried on in different countries. We are glad to know that the British branch with over a hundred members has already had a successful meeting and we understand that the secretary of this branch Dr Macdonald Critchley (137 Harley street, London W1) hopes to hear from other medical men who are interested.

AFRICAN HORSE-SICKNESS

For nearly 50 years veterinarians in South Africa have been striving to combat horse-sickness a disease first described by some of the early explorers of the African Continent which has made it almost impossible to use susceptible horses and mules throughout vast tracts of country. The late Sir Arnold Theiler and his colleagues at the Institute of Veterinary Education and Research of the Union of South Africa Onderstepoort identified the causal agent as a filtrable virus many years ago and directed their attention to devising methods of protecting equines from infection. Apart from the testing of empirical prophylactic and therapeutic procedures advocated by farmers and others from time to time two lines of research have been followed, the one being to identify the method of spread of the disease and the other to produce a satisfactory active immunity. All epidemiological evidence indicates that infection is transmitted by a night-flying insect vector such as the mosquito. Apart therefore from testing the protective value of measures designed to ward off such insects extensive attempts have been made to identify the species of insect responsible. In their reports of the investigation O Nieschulz A H Bedford and W O Neitz² describe the feeding on infected horses of 4500 clean mosquitoes belonging to the genus *Aedes* and their failure to transmit the disease when subsequently allowed to feed upon susceptible animals. Various other genera besides *Aedes* are possible vectors and the identification of the vector might well become a tedious process of elimination. Fortunately owing to recent improvements in methods of immunisation indicated below the identification of the vector has become a problem of academic rather than practical interest. Attention has also been centred on the natural reservoir of infection. Horses are known to harbour virus for many months after recovery but the presence of

such virus is difficult to demonstrate. Since horse-sickness has appeared among susceptible horses introduced into districts where no equines were previously to be found it seems unlikely that equines constitute the only important natural reservoir. Dogs can be artificially infected but there is no evidence that this circumstance has any epidemiological importance.

As to immunisation until recently equines had to be used for investigations which were thus cumbersome and expensive nevertheless research proceeded steadily and a significant advance was made by the discovery of a strain of virus of low pathogenicity but reasonably good immunising capacity. Using this strain a method of immunisation was developed of administering a double inoculation consisting of an intravenous inoculation of mild virus followed six days later by a combined intravenous inoculation of virulent virus and nearly half a litre of immune serum. For many years this form of inoculation was practised in many parts of Africa with reasonable success. According to du Toit (1934) 2-3 per cent of horses died from horse-sickness as a direct result of the immunisation 3-4 per cent died as a result of breakdown of immunity and 0.1 per cent died of acute liver atrophy (staggers) following immunisation. These figures apply to police horses kept under good conditions amongst farm animals losses were higher and in view of the high cost of the immune serum and the large dosage required the occasional breakdown of immunity and the inexplicable though rare occurrence of acute liver atrophy this method though useful was clearly far from ideal. Formalised virus was then tried but three injections were required in horses followed by a dose of virulent virus to secure a strong and lasting immunity and such a procedure was clearly unsuitable for routine use.

At this stage the reports of American workers on yellow fever presented a new method of attack. M. Theiler (1930) reported the infection of white mice with yellow fever virus by means of intracerebral inoculation the virus becoming neurotropic during the course of brain passage. Later Sawyer Kitchen and Lloyd (1932) reported that such neurotropic virus had low lethal and high immunising capacity. O Nieschulz (1932) and R A Alexander (1933) discovered independently that mice could be infected with horse-sickness by intracerebral inoculation the virus becoming neurotropic during passage. Nieschulz failed to demonstrate sufficient attenuation of the virus for immunisation purposes but Alexander working at Onderstepoort found that after about 100 mouse-brain passages neurotropic virus could safely be injected subcutaneously into horses and that animals so injected developed a strong immunity to pantropic virus. In developing the neurotropic virus for immunisation purposes the existence of antigenically distinct virus strains had to be considered. Working with three different neurotropic strains Alexander (1936)³ found that horses inoculated with a mixture of three strains showed as a result a strong immunity to all three. It would appear therefore that no antagonism exists between virus strains. Whether a polyvalent vaccine is really necessary or not can only be proved by extensive field trials. The most recent report by Alexander Neitz and du Toit (1936)⁴ records the immunisation of equines with neurotropic virus in a large field experiment in which a reasonable estimate of the value of the new technique could be made. A trivalent vaccine

¹ Epilepsia. The Journal of the International League against Epilepsy. Second series. Edited by H I Schou (Danaland Denmark) in collaboration with Taylor Fox (England) William G Lennox (Boston) and L J J Muskens (Amsterdam). Published by Levin and Munksgaard, Copenhagen. 5s. 6d.

² Onderstepoort J. vet. sci. 1935, vol. 3.

³ J. vet. 1936 7 11.

J. vet. 1937 p. 17.

was prepared by mixing filtrates of emulsion of brains of mice infected with three important virus strains. The preparation of such a vaccine is complicated by the fact that the incubation period of the virus in mice differs for each strain, the authors claim, however, that the procedure was quickly reduced to a simple and inexpensive routine. The vaccine was issued as 10 c.c. doses for subcutaneous inoculation, and it was found that about 600 standardised doses could be prepared from 48 mouse brains. During the period 1934-35 1815 police horses were immunised by single inoculations of the new vaccine. There was no mortality as direct result of the inoculation and no adverse after effects were reported except for a breakdown of immunity in 0.66 per cent of animals when exposed to natural infection. Among 28,659 other horses and mules from various sources, 3 deaths were reported which may have been due to vaccination and the immunity broke down in 0.87 per cent of animals. So much is known of the usual incidence of horse sickness when no immunisation has been carried out that the value of the vaccine would appear to have been demonstrated, in spite of the absence of controls in this particular experiment. Incidental points remain to be investigated for instance, possible after effects of neurotropic vaccination upon fecundity or pregnancy, the possible formation of irreparable lesions in the central nervous system followed by paralysis, the duration of immunity and the length of time vaccinated animals remain reservoirs of infection. These considerations are of minor importance, the new neurotropic vaccine stands out as a highly satisfactory outcome of many years of patient and unremitting research.

A DEMAND FOR ACTION

"To inquire into the diet of the people, and to report as to any changes therein which appear desirable."

SUCH is the task of the Advisory Committee on Nutrition appointed by the Minister of Health and the Secretary for Scotland, and in presenting their first report they claim that "this is the first occasion in history that a comprehensive survey, statistical and physiological, of the diet of a whole nation has been set on foot by any Government." The report is a preliminary description of the situation as it is to day, with suggestions about the changes immediately needed. The Committee range themselves clearly on the side of those who preach the advantage to be gained from an adequate supply of the right kinds of food. "We believe," they say, "that better physique and health can be obtained and resistance to disease increased by the application to human diets of recent knowledge which demonstrates the importance of certain classes of food for proper nutrition." They admit that the facts lately brought to light are too complex for the layman to grasp, but they consider that the practical lesson to be learnt from these facts is very simple indeed. It is merely that we must include in the dietary of the whole community—and especially of mothers and children

—enough of the "protective foods." The term "protective," originally given by McCollum to milk and green vegetables, is now applied generally to all foods rich in the nutrients that research has shown to be essential for health—especially milk and milk products, green vegetables, fruit, and eggs. The consumption per head of most foodstuffs has increased in this country since before the late war, the largest increases being in condensed milk, fruit, butter, vegetables (other than potatoes), eggs, tea, margarine, and cheese. Indeed, the consumption of butter and margarine together is now, per head, 56 per cent higher than it was in 1909-13. On the other hand the quantity of cereals used has fallen by nearly 10 per cent and of fresh milk and cream by 6 per cent. Examining the national food-supply as a whole the Committee find no aggregate deficiency of calories, fats, or proteins, but they hold it probable that there are deficiencies, of fat and of animal protein at least, among the very poor. They underline Sir John Orr's conclusion that the consumption of the best foods—fresh milk, butter, meat, fish, eggs, fruit, and vegetables (other than potatoes)—rises progressively with income, whereas that of flour and potatoes remains nearly constant, while the amount of margarine and condensed milk used goes down, and in order to secure more complete data they propose further investigation of income distribution, family budgets, and domestic wastage. They believe that the national consumption of fruit and vegetables is too low, especially among the poor, but what they chiefly regret is that the present national consumption of liquid milk is less than half their optimum of seven eighths of a pint per head per day. Children, they say, should have 1-2 pints, expectant or nursing mothers about 2 pints, and the rest of us half a pint; and without going into the economics or politics of milk they "deplore the fact that, while the volume of milk offered for sale is growing and there is a substantial surplus which it is beyond the capacity of the liquid milk market to absorb, there should be at the same time a severe deficiency of milk in the diet of large sections of the population. That under-consumption of a foodstuff so important as milk should exist in a country so eminently suited for milk production, is a matter towards which we cannot remain indifferent." They hope that in dealing with this problem the primary objective of the State will be to ensure that a sufficient supply of safe milk is brought within the purchasing power of the poorest—a measure which in their opinion would do more than any other to improve the health, development, and resistance to disease of the rising generation. The steps already taken towards this end, such as the milk in schools scheme, are a good beginning, but as the Committee rightly say, they do not provide enough milk for all mothers and children who need it, while very little provision is made for adolescents. It is encouraging to find that the report has already borne first fruit in a circular addressed to local authorities by the Ministry of Health, urging them to review their present arrangements in the light of the recommendations now so strongly made.

* Minister of Health. First Report of Advisory Committee on Nutrition. London. H.M. Stationery Office. 1937. Pp. 52. 1s. The members of the Committee are: Lord Luke (chairman), Mrs. Eleanor Barton, Mr. J. N. Beckett, Dr. G. F. Buchanan, Prof. F. P. Cathcart, M.D., F.R.S., Mr. R. R. Enfield, Dr. J. All on Clover, Dr. J. M. Hamill, Mr. A. Bradford Hill, D.Sc., Sir Cowland Hopkins, F.R.C.P., F.R.S., Dr. Donald Hunter, Mr. F. M. H. Lloyd, Dr. E. Mellanby, F.R.S., Sir John Orr, M.D., F.R.S., Mr. L. C. Ramsbottom, Mr. J. M. Vailant, M.D., Mr. Ruth Preuss, Mr. E. C. Ramsbottom, Mr. J. H. T. Wiltshire, Dr. T. W. Wade, Mr. J. R. Willis, and Mr. F. H. T. Wiltshire, with Mr. W. J. Peete and Mr. N. F. McNeill as secretaries and Dr. H. E. Mudge as medical secretary. The late Mrs. Chalmers Watson, M.D., was also a member.

MODEL TRAFFIC LIGHTS FOR CHILDREN—The Save the Children Fund in conjunction with the Ford Motor Company, Ltd., is issuing an ingenious model which by manipulation shows successively the familiar red, amber and green of the streets, and is intended to teach children how to cross the road in safety. Copies may be had free of charge on application to the fund at 20, Gordon square, London, W.C.1.

PRINCIPLES OF MEDICAL STATISTICS

VIV—FURTHER FALLACIES AND DIFFICULTIES

The Crude Death rate

In using death rates or fatality rates in comparison with one another, or as a measure of the success attending some procedure it must be remembered that such rates are usually affected considerably by the age and sex constitution of the population concerned. The fact that the death rate of Bournemouth in 1935 was 13.3 per 1000 while the rate in Bethnal Green was only 10.3 is no evidence of the salubrity of the latter area. The greater proportion of old persons living in Bournemouth compared with Bethnal Green must lead to a higher death rate in the former since old persons however well housed and fed, die at a faster rate than young persons. The 1931 census shows that there were at that time $2\frac{1}{2}$ times as many persons in Bournemouth as in Bethnal Green at ages over 75 years 70 per cent. more at ages 50-74 and 10 per cent. less at ages 10-40. Any population containing many persons round about the ages of 5 to 20 where the death rate is at its minimum, must have a lower total death rate than that of a population containing many infants or old people at which points of life the death rate is relatively high, even though comparisons at every age show an advantage to the latter. For example the following fictitious figures may be taken

Age-group (years)	District A			District B		
	Population	Deaths	Death rate per 1000	Population	Deaths	Death rate per 1000
0-15	500	2	4	400	1	3
15-30	1000	12	12	800	11	13.75
30-45	2000	18	9	1000	5	5
45-60	1000	10	10	2000	18	9
60-75	300	20	66.67	1000	20	20
75+	100	15	150	400	70	175
All ages	6100	67	11.0	6100	115	18.85

Comparison of the two districts shows that B has at every age-group a lower death rate than A. Yet its death rate at all ages the crude death rate is more than double the rate of A. The fallacy of the crude rates lies in the fact that like is not being compared with like: 72 per cent of B's population is over age 45 and only 28 per cent of A's population; in spite of B's relatively low death rates at these ages over 45 the number of deaths registered must be higher than in A's smaller population and therefore its total death rate must be high.

Comparison of the rates at ages is the most satisfactory procedure for then like is being placed against like, at least in respect of age (so long as the age groups are not too wide in the above example they were made unduly wide for the sake of compression and clarity).

The Standardised Rate

At the same time a legitimate desire is often felt for a single mortality rate summing up the rates at ages and yet enabling satisfactory comparisons to be made between one rate and another. For this purpose the standardised death rate is required. For its calculation (by what is known as the direct method) the mortality rates at ages in the different districts are applied to some common standard population

to discover what would be the total death rate in that standard population if it were exposed first to A's rates and then to B's rates at each age. These total rates are clearly fictitious for they show what would be the mortality in A and B if they had populations which were equivalent in their age-distributions instead of their actual differing populations. But these fictitious rates are comparable with one another and show whether B's rates at ages would lead to a better or worse total rate than A's rates if they had populations of the same age type.

For example if the standard population taken for A and B consisted of 500 persons in each of the age-groups 0-15 and 75 and over 2500 in each of the age groups 15-50 and 60-75 and 3000 in each of the age groups 30-45 and 45-60 then in this standard population A's death rates would lead to a total of 230 deaths and B's rates to 201 deaths giving standardised rates at all ages of 19.6 and 16.8 per 1000. Taking a population of the same age distribution thus shows the more favourable mortality experience of B, and the fallacy of the crude rate is avoided. (The deaths that would occur at each age in the standard population at the death rates at ages in each district are found by simple proportion: they are summed and divided by the total population in the standard to give the standardised rate.)

Clearly these fictitious but comparable rates will be affected by the choice of the standard population. It must be observed however that their absolute level is not of interest: it is the relative position that matters and within limits this relative level is not likely to be materially altered by the use of different standards.

The example taken above is of course a very exaggerated one and such gross differences in population are unlikely to occur in practice. On the other hand the differences that do occur in practice are quite large enough to make the use of crude rates seriously misleading.

For instance the crude death rate in England and Wales, of women from cancer was 103 per 100 000 in 1901-10 and 139 in 1921-30 a very appreciable rise being shown. The corresponding standardised rates were 91 and 99; clearly the larger number of women living in the older age groups (where cancer is more frequent) in 1921-30 compared with the number in 1901-10 is largely responsible for the increase in the crude rates and no more subtle factor need be looked for.

With the present increasing proportion of persons living at later ages (owing to the fall in birth and death rates) it is certain that the crude death rate from all causes in England and Wales will in time begin to rise in spite of the fact that the death rates at each age may continue to decline.

Comparison of death rates may also be affected by the sex proportions of the populations considered for at most ages and from most causes females suffer a lower mortality rate than males. Standardisation therefore is sometimes made both for sex and age. (The methods and the alternative method of indirect standardisation are fully described and illustrated in Woods and Russell's Introduction to Medical Statistics.)

The principles of standardisation are often applicable in experimental work. For instance some form of treatment is applied to certain persons and others are kept as controls. If the two groups are not equal in their age-distribution a comparison of the total result may be misleading. A comparison in each separate age-group must be made or to reach a total figure the two sets of rates at ages can be applied to

some selected standard population. A useful method is to use the treated group as the standard and calculate how many deaths would have taken place in it if it had suffered the same fatality rates at ages as the controls. This expected figure can then be compared with the observed figure.

In considering published crude rates—death, fatality, incidence, &c—one must always put the questions: do the populations on which these rates are based differ in their age or sex distribution, and would such differences materially influence the comparability of the crude rates? Crude rates themselves should never be accepted without careful consideration on those lines.

Statistics of Causes of Death

In making comparisons between death rates from different causes of death at different times or between one country and another, it must be realised that one is dealing with material which is, in Raymond Pearl's words, "fundamentally of a dubious character." The recorded incidence of a particular cause is influenced by such factors as international differences in nomenclature, differences in tabulation, medical fashions in nomenclature, and the frequency with which the diagnosis of cause of death is made by medically qualified persons. One or two simple examples of the risks of comparison may be taken.

MORTALITY FROM CANCER

The crude death rate from cancer in the Irish Free State is well below that registered in England and Wales. Part of this difference may be due to a more favourable age distribution of the population in the Free State—i.e., standardised rates should be used in the comparison—but it is likely that it also arises from differences in the certification of death.

In the Irish Free State considerably more deaths are ascribed to senility than in England and Wales—15 per cent in the former in 1932 against about 4 per cent in the latter. Such a difference cannot inspire confidence in the death rate from such a disease as cancer, in which the majority of deaths fall at advanced ages. In general, in comparing the cancer death rates of different countries or of the different areas of the same country—e.g., rural and urban—it is not sufficient to pay attention to the cancer rubric; other headings such as "uncertified," "senility," and "ill-defined causes" must be taken into consideration, and an attempt made to determine whether transferences between these rubrics are likely to play a part.

The kind of indirect correlation that one may observe is this. It is stated that the cancer death rate is associated with the consumption of sugar, and the level of the former is compared with some measure of the latter in different countries. It is found that the countries with a low consumption of sugar have relatively low cancer death rates. But it is at least possible that those countries which have a high standard of living have a relatively higher sugar consumption and also a higher standard of vital statistics and therefore more accurate cancer death rates, than countries with a low standard of living and less accurate vital statistics. Other "causes" of death—e.g., ill-defined and old age—would need study as well as those attributed directly to cancer.

MATERNAL MORTALITY

It is well recognised that the maternal death rates of different countries are affected by the varying rules of tabulation in vogue. A sample of deaths associated with pregnancy and childbirth that took place in the U.S.A. was assigned by different

statistical offices of the world to puerperal and non puerperal groups according to the rules of those offices (Children's Bureau Publication No. 229). The variability was considerable. In the U.S.A. 93 per cent were tabulated to puerperal causes, in England and Wales 79 per cent, in Denmark 99 per cent. Such differences make international comparisons precarious.

MORTALITY FROM RESPIRATORY CAUSES

In England and Wales bronchitis and pneumonia show pronounced differences in their incidence in different parts of the country at certain ages. It appears that the "bronchitis" of one area may include deaths which would be attributed to pneumonia in another. For instance, the Registrar General concludes that "at both extremes of life London appears to call pneumonia many cases which are elsewhere regarded as bronchitis" (Registrar General's Annual Report, Text, p. 85, 1932). Such "internal" differences are always closely considered by the Registrar General and his reports are invaluable to all who are concerned with the changes in the causes of death.

The Average Age at Death

The average age at death is not often a particularly useful measure. Between one occupational group and another it may be grossly misleading. For instance, as Farr pointed out three quarters of a century ago, the average age at death of bishops is much higher than the corresponding average of curates. But making all the curates bishops will not necessarily save them from an early death. The average age at death in an occupation must, of course, depend in part upon the age of entry to that occupation and the age of exit from it—if exit takes place for other reasons than death. Bishops have a higher age at death than curates because few men become bishops before they have passed middle life, while curates may die at any age from their twenties upwards.

The following misuse of this average is taken from a report on hospital patients.

It is stated that in 31 cases of renal hypertension which came to autopsy the average age of death was 45. "Thus the common fate of the renal hypertensive is to die in the fifth decade of life." This may be a true statement of fact, but it clearly cannot be deduced from the average age: the average might be 45 years without a single individual dying in the fifth decade. The report continues: In 80 cases of essential hypertension which came to autopsy the average age at death was found to be 60, while in 20 cases seen in private practice the average age at death was nearly 70.

"Thus, the fate of the non renal hypertensive is very different from that of the renal. The subject of uncomplicated essential hypertension may reasonably expect to live into the seventh or even the eighth decade."

The first deduction is probably valid though obviously information regarding the variability round those averages is required. The frequency distributions of the age at death for the two groups should be given. The "reasonable expectation" has no real foundation in the figures given. If the subjects of uncomplicated essential hypertension mainly live into the seventh or eighth decade one might reasonably adopt that as an expectation. But if the average age is derived from individual ages at death varying between say 40 and 90, one has no justification for using that average as an expectation.

The author regards statistics as "dull things" and therefore refers to them as "briefly as possible"—so briefly that in his hands they are of very little use.

A difference in the average ages at death from, say, silicosis in two occupations may imply that in one

occupation the exposure to risk is more intense than in the other and thus leads to earlier death but this interpretation can only hold as is pointed out above, so long as the employed enter the two occupations at the same ages and give up their work at the same ages and to the same extent. It is usually very difficult to secure satisfactory evidence on these points, and the average ages at death must be regarded with some caution.

Problems of Inheritance

Literally hundreds of disorders or derangements in mankind have been recorded as showing evidence of hereditary factors. The evidence mainly consists of the appearance of the disease or disability in a more or less orderly fashion among related individuals. In many instances there is no doubt that hereditary factors are important but in others their presence is difficult of proof in the inevitable absence of controlled breeding experiments and the impossibility sometimes of distinguishing genetic from environmental influences. Cases are reported, for example, of a familial incidence of cancer: a man whose father died of cancer of the stomach died himself of cancer in the same site, while his wife died of cancer of the breast and their six children and one grandchild all died of various forms of cancer. This is a very striking family history but it is not necessarily evidence of an inherited

factor. If each of these individuals had been known to have passed through an attack of measles we should not deduce a particular family susceptibility to measles since we know that measles in the whole population is so widespread that a familial incidence is bound to occur very frequently. Similarly we want to know the probability of observing a series of familial cases of cancer merely by chance. Even if that probability is small it must be remembered that the field of observation amongst medical men is enormously wide and a few isolated instances of multiple cases cannot be adequate evidence. Usually too only one part of the field is reported in medical literature for notice is taken of the remarkable instances and no reference made to the cases in which no inheritance is apparent. The data required in such a problem are reasonably large numbers of family histories so that if possible it may be seen whether the distribution of multiple cases differs from the distribution that might be expected by chance or whether the incidence in different generations suggests a Mendelian form of inheritance. Even if the distribution of multiple cases differs from that expected on a chance hypothesis the question of a common family environment cannot be ruled out—e.g. multiple cases of tuberculosis may occur more frequently in families of a low social level not through an inherited diathesis but through undernourishment.

A B H

SPECIAL ARTICLES

PLANT VIRUSES

AND THEIR RELATION TO THOSE AFFECTING MAN AND ANIMAL*

By REDCLIFFE N. SALAMAN M.D. Camb. F.R.S.

DIRECTOR OF POTATO VIRUS RESEARCH STATION
UNIVERSITY OF CAMBRIDGE

THE first virus disease of any kind to be recognised as such was mosaic in tobacco. It was Mayer of Holland in 1886 who demonstrated both its infectivity by sap inoculations and the absence of any fungi or bacteria in the infective juice. Long before this a protean type of disease producing leaf deformity, dwarfing and reduction of crop in variable degree had been recognised in the potato and referred to as it goes back for over 150 years. The disease which was very widespread in England was regarded as the result of prolonged vegetative reproduction that had induced an incurable senility. The only remedy for this, it was maintained, was to discard the old and create new varieties from true seed obtained by the fertilisation of the female portion of the flower with pollen generally of some other variety. There was in fact a widespread if subconscious sympathy with a plant on whom had been enforced a celibacy which was regarded as unnatural and abhorrent by the agriculturist. That the plant reacted by becoming peevish and degenerate was only what might be expected. The cry of back to nature came from the heart. This view persisted in many quarters in this country even so late as the last war, indeed I may claim some share in helping to dispel the myth which as late as 1912 was firmly held in certain influential quarters.

EARLY WORK

In some years this degenerative disease of the potato was so severe and the resultant crop so had as to threaten the continuance of potato cultivation in this country. In 1778 the Agricultural Society of Manchester invited essays on the cause and possible cure of the trouble. These were printed and some 15 years ago with Prof. W. Brierley's help I was fortunate in discovering a copy and making parts of them known once more. Much interest lies in the fact that the chief diseases complained of seem to have been either a chronic form of crinkle—probably a secondary result of infection with the Y virus—or leaf roll. One competitor felt convinced that the green fly was the cause of all the trouble thus forestalling by about 140 years the discovery made by Oortwijn Botjes in 1920 that the virus disease leaf roll was spread in the field by aphids.

Returning to tobacco mosaic which has ever remained the classic subject for virus research it was Iwanowsky who in 1892 showed that juice from a diseased plant remained infective after passing through a porcelain filter which would hold back bacteria. He further showed that the infective agent multiplied indefinitely within the plant. The virus, he found, was highly resistant to alcohol and to drying and he regarded the disease as due to something either held in solution or carried by minute particles in the cell plasma.

Beljerinek (1890) ignorant of Iwanowsky's work investigated with great thoroughness the disease Mayer had described and reached similar conclusions. He described the infective agent as a contagium fluidum and recognised that such yellows which Erwin Smith in 1888 had shown was communicable by budding or graft was but another example of the same trouble. Löffler and Loesch's discovery that the infectious agent of foot and mouth

Sheffield and Henderson Smith (1931) have studied their formation in the living cell. In an infected cell agglomeration of denser cytoplasm takes place, and the small masses thus formed impinge on one another and eventually coalesce to form a large extra-nuclear vacuolated body. Whether such contain more virus particles than reside elsewhere in the cell is highly probable but not proven. Just as not all plant virus infections are accompanied by inclusions, so not all the cells of an infected plant contain them—in fact, it is only a minority that do so.

Tobacco mosaic—the first virus in animal or plant to be recognised as such—is to day in the very forefront of biochemical and biophysical research. In 1936 Stanley prepared a product showing certain crystalline characters from the juice of tobacco plants infected with mosaic; he claims that it represents the virus agent, and that the crystals are protein auto-catalytic enzymes, which on introduction into suitable hosts bring about the transformation of normal cell constituents to a like body. It will be recognised that this view is identical with that of Bordet's in relation to the multiplication of bacteriophage, and presents similar difficulties. F. C. Bawden has improved on Stanley's technique and found that such crystals were readily obtained from the common as well as from two variant types of tobacco mosaic, and confirmed Stanley in that they are absent from normal tobacco juice. The crystals from the three sources, which were identical in appearance and physical properties, on inoculation to healthy plants reproduced the three original specific types of reaction. The crystals consist of protein and in solution behave as doubly refracting liquid crystals which Bawden and others (1936) have found to be composed of very elongated molecules of enormous size with a molecular weight in the neighbourhood of 10-8 and possessed of distinctive physical properties. Whether these crystals are in fact the virus agent cannot be positively affirmed—that they contain the virus in a highly concentrated form is certain, for dilutions of 10-9 are still active. Nevertheless, Chester (1936) testing Stanley's crystals by Dale's anaphylactic method has shown that they contain an unspecified but quite definite amount of protein that is certainly not virus. Thus and the fact that the crystals account for 80 per cent of the total protein of the plant suggests the possibility that Stanley's isolate may be a crystalline form of protein, itself a product of the reaction of the virus on the healthy plant protoplasm and that the specific virus particles are adsorbed to it. Crystals of this kind have only been obtained from plants infected with the virus of tobacco mosaic, though whether the host is a tobacco or a tomato is immaterial. Efforts to obtain the like from plants infected with the X potato virus, the virus of tobacco necrosis and many others have failed †.

PROPERTIES

The physical properties of plant viruses vary very much, some behave to heat, light, and chemical

† Since the delivery of this lecture much progress has been made along these lines both in America and in this country. Stanley and Wyckoff (Science Feb. 12th 1937) have isolated a protein with crystalline character and very high virus concentration from plants infected with Wingard's tobacco ringspot and similar but non-crystalline heavy proteins from plants infected with the X virus of the potato and cucumber mosaic. Beard and Wyckoff (Science Feb. 19th 1937) have isolated a like body from suspensions of Shope's papillomatosis virus disease of rabbits.

The trend of opinion both in America and in England where important work on the purification and properties of these protein molecules is actively proceeding is to regard them as being the actual virus agent to which the term 'living' as generally understood hardly applies.

reagents in much the same way as do bacteria, but the behaviour of some others—and it is noteworthy that they are those of very small size—is peculiar, thus tobacco mosaic is not inactivated till a temperature of 90° is obtained, whilst if and tobacco necrosis will withstand the action of absolute alcohol for many months. These same viruses can also be desiccated and maintain their full virulence indefinitely. Again, tobacco mosaic crystals are almost immune to proteolytic enzymes, though pepsin eventually destroys the active agent in raw juice, while trypsin is without effect. There are other plant viruses however which are extremely sensitive to heat and chemical reagents or to keeping whether in moist or dry conditions outside the plant, amongst such are to be found three of the most widely spread and infectious viruses—viz, the potato virus Y, tomato wilt, and cucumber mosaic.

Animal viruses are endowed to a high degree with the capacity of inducing in their hosts a variety of antibodies. It is less well known that many plant viruses are equally antigenic. Rabbits inoculated with tobacco mosaic juice or Stanley's crystals, or with the X virus of the potato and several other plant viruses, produce antibodies that are absolutely specific to the virus employed, and its related strains and their presence can be demonstrated as precipitin, complement fixation, or neutralisation reactions. Certain viruses, such as the Y potato virus and the virus of sugar beet mosaic and tobacco necrosis, have failed to call forth any antigenic response in the rabbit. It should be noted that the injection of plant virus juices has not produced the slightest pathological reaction in the rabbit nor has any virus agent yet been found which is pathogenic to both plant and animal.

VARIATIONS

A word must be said about the variations or strains of certain viruses which are found in nature or induced in the laboratory. Multiplicity of strains is much more pronounced in the plant than the animal viruses, thus there are some 70 variations of tobacco mosaic, 40 of cucumber mosaic, and 5 of the X potato virus. If the tendency to vary be regarded as evidence of adaptability, and adaptability as a peculiar function of living matter, then we are confronted with the fact that the virus with one of the smallest particles—viz, tobacco mosaic—varies the most.

A few examples are known where plant viruses have been induced to vary by passage through certain hosts and by treatment such as heat. I have converted a virulent potato X virus into a harmless variety by passage through a sugar beet and a virulent potato Y virus both by passage through a schizanthus and by heat into one of much less virulence.

ANTIGENIC AND PROTECTIVE REACTIONS

In 1933 I described some observations in which it was shown that if a plant were inoculated with the G strain of the X potato virus and some ten days later this was followed up by an inoculation with a severe virulent strain of the same virus, then no reinfection took place and the plant remained to all appearances completely healthy, though of course it still contains the mild protecting strain. The whole phenomenon bears a close resemblance to that of vaccination.

Subsequently I found that Thung in Java in 1931 had shown that a tobacco plant infected with a virulent and crippling form of tobacco mosaic could

not be further infected with a different but rather less virulent form of the same virus. The two observations probably have the same explanation: once a cell is infected with a given virus all affinities as regards that virus are satisfied and no other strain can obtain an attachment. It is a case of first come first served. The protection afforded is rigidly specific. There is no doubt that this type of protection is cellular in nature whereas the animal examples so far reported are humoral.

Recently Findlay and MacCullum (1937) have reported a case of protection in yellow fever which appears to be of the same nature as that described above resting on a cellular basis and not as is general in animals on a humoral one. In plants we have no evidence at all of humoral immunity.

In nature potatoes are often protected against the severe X virus strain by a pre-existing infection with a milder type. Such protection has probably been in force ever since potatoes have been cultivated on a large scale.

The effect of virus infection in plants may be roughly grouped as follows—

- (a) Mottling of the leaves only
- (b) Deformity and crinkling of the leaves, generally accompanied by mottling. The deformity may go as far as the more or less complete suppression of the leaf or its conversion into a thread-like structure
- (c) Necrosis, either as isolated spots or patches on the leaf, destruction of the phloem vessels in the veins, as streaks on the stem or as a dieback from the top of the growing point
- (d) In nearly every case there is a pronounced dwarfing of the plant as a whole which may be so extreme as to make the plant unrecognisable
- (e) The floral organs are frequently imperfect or deformed causing a varying degree of sterility or there may be little or no deformity and yet a considerable measure of sterility

Some characteristic deformities such as the conversion of the leaf lamina to threadlike structures in tomato and the curl and discoloration of the leaf in potato roll simulate genetic mutations or congenital deformity respectively.

These and other facts have given some support to the thesis that a virus agent may be an hereditary gene freed somehow from the chromosome and capable of more or less independent life in the cytoplasm. This theory though attractive is without any experimental backing.

Reaction to Infection

The potato illustrates very clearly two characteristics that are common in virus diseases of plants and are also encountered in virus infections in animals. The first is the carrier the second the disease complex.

THE CARRIER

Every potato plant in the U.S.A. harbours one or more strains of the virus X. In the majority of cases it produces nothing more than a transient faint mottle which disappears as the plant attains maturity: often there is nothing to denote its presence. In a few of our own varieties such as Epicure and Arran Crest the same virus is lethal in its effect. Many years ago my colleague Le Pelley and myself found (1930) that every King Edward plant that exists contains a virus which when communicated by grafting to such varieties as Arran Victory or Arran Chief produced a crippling and incurable disease which we called paracrinkle: yet the King Edward plant itself shows not the slightest sign of ill health. The presence in King Edward of this virus which is not

sap inoculable and so far as we know not conveyed by insects presents a unique problem. Every one of the millions of King Edward plants grown since its introduction twenty-five years ago has been derived from the original single seedling which theoretically at least must have obtained and carried this virus. Whence it was derived and how it gained an entry remain unknown. A solution of this problem might well throw light on the origin of viruses.

TRANSFERENCE OF PLANT VIRUSES

In general the transfer of a virus disease from plant to plant is effected by the intermediary of an insect and in the majority of cases by a sucking insect. Foremost amongst them are the aphids the most catholic of which in its tastes is the peach aphid or *Myzus persicae* which conveys amongst many other diseases leaf roll and leaf drop-streak in potato and mosaic in cauliflowers, and from them carries it to many of our garden flowers. Next come the hoppers which feed in a similar manner to the aphid and are responsible for conveying many very widespread plant diseases such as curlytop in sugar beet streak in maize and yellow aster. Both families of insects are provided with an extremely fine proboscis which inserted between the palisade cells of the leaf penetrates into the fine phloem terminals. Feeding on a diseased plant results in the insect's saliva being contaminated with the virus and the insect on passing to the next plant transfers the disease. If the plant is a healthy one, it may then become infected. Tomato spotted wilt a most infectious disease which readily attacks an enormous and diverse range of host plants is spread by means of a thrips which feeds by a superficial rasping process. The thrips can only pick up the virus when in the larval stage it retains the virus and conveys the disease during its adult life.

An interesting consideration is the degree of specificity displayed between insect and virus in the case of plant and animal respectively. In animal disease a strictly specific relation is rare: that between the body louse and typhus and trench fever seems to be the closest. Dengue while commonly conveyed by the mosquito *Stegomyia fasciata* seems able to make use of two other species on occasions.

In plants we have several examples of a close relationship between vector and virus, such as in curlytop of sugar beet and *Eutettix tenella* aster yellows and *Oncodula sexnotata* streak disease of maize and *Oncodula mabilis* while many others are conveyed by the aphid *Myzus persicae* and one or two closely related aphids. The problem suggested by this close relationship must be left without further discussion as we have no certain evidence as to any developmental relationship between virus and insect.

As to what happens to the virus within the insect is another problem which has not been solved. In some cases an incubation period supervenes which implies some reaction between virus and insect in other cases it is probably a question of mechanical transference only.

Tobacco mosaic and the potato X virus both very infectious, do not appear to have any insect vector. It is interesting that in both these cases spraying with an atomiser a suspension of infected juice on to the leaves of a healthy plant is enough to produce infection.

VIRUS COMPLEX

By a virus complex is meant a disease induced by the combined effect of two or more distinct viruses. The clinical picture that results from this may be

quite unlike that occasioned by the action of either

The following example in potatoes will illustrate it

The virus Λ^G produces no effect on the variety President

The virus A produces at most a slight venal mottle

The combination Λ^G and A produces a severe crippling crinkle

Similarly —

The virus X produces mild mottle or no effect on the variety President

The virus F produces no effect

The combination Λ^G and X^F produce bright permanent interveinal mottle

Similar results arising from the coexistence of two or more viruses can be demonstrated in tobacco

I have found (1932) some evidence that in certain cases in the potato an opposite effect to that described as a result of a virus complex may result. The presence of two or more viruses in the same plant, any one of which would normally produce a serious disease, may result in a reduction of morbid symptoms, the plant being then converted into a carrier. Thung has reported a similar phenomenon in tobacco

TYPICAL DISEASES

Thanks very largely to the work of Kenneth Smith (1936) we have greatly extended our knowledge in the last year or two of the virus diseases of plants both in our gardens and in glasshouses. Reference to his paper (1936b) will open the eyes of some to the fact that their glasshouses and gardens are veritable virus museums. I will only refer to a few of the more outstanding cases

Tomato spotted wilt—This virus is one of the most destructive diseases that affects the tomato. It is carried by the ubiquitous glasshouse thrips and attacks a very large number of plants of many diverse families but even more important is the fact that it is carried or produces but minor symptoms by some. In a commercial house a devastating epidemic has been known to occur as a consequence of the grower keeping a few favourite but infected nasturtium plants in his house from which the thrips spread the infection, a similar danger may arise from infected chrysanthemums. Some of the chief garden flowering plants affected are asters, marigolds, cinerarias, dahlias, lupins, and poppies, whilst in the greenhouse primulas, episcadium, and particularly lilies of the amaryllis type. Weeds such as the dock, the bindweed, and *solanum nigrum* may all serve as centres of infection.

Cucumber Mosaic—This virus, which has been studied for many years in the Cucurbitaceae, is now found to have gained a footing in most gardens. It particularly affects marigolds, asters, delphiniums, and lupins. It produces a flecking or breaking in violas.

Cabbage Mosaic—Cabbage plants of all kinds are most commonly affected with a virus which causes considerable distortion of the leaves and a mottle, on old plants black rings develop and dark green bands along the veins. This virus is frequently conveyed by the aphid, *Myzus persicae*, to stocks and wallflowers, and produces in them a breaking of the flower when infected some of the best of the old self-coloured purples bear only washy streaked flowers.

Mosaic or stripe disease of bulbous plants—Chiefly affects the leaves by inducing light stripes on the leaves of narcissi and daffodils. The flowers often develop a similar streak and all the plants are weakened.

Tulip Break—There are three types of break recognised (1) Full break, in which the basic yellow or white mesophyll tissue is exposed by the withdrawal of the red or purple of the epithelial layer. This is probably due to the interaction of two viruses. (2) Self break, the self colour is intensified producing a streak, one virus only appears to be at work. (3) Clotted break, in which large splashes of intensified colour occur on the petals of the

dark purple shun varieties. The viruses are conveyed by three species of aphids. *Anuraphis tulipæ* which lives on the bulbs and transmits the diseases from bulb to bulb in store, and *Myzus persicae* and *Macrosiphum gei*, which feeding on the leaves convey the disease in the open.

Pelargoniums, especially the varieties Paul Crumpel and King of Denmark, are subject to a disease that causes much spotting and leaf curl in the old leaves. Young leaves in older plants appear to be normal. No vector has been found.

Prevention

It may be asked what protection have we against these subtle virus pests, from whose attacks in plants there is no real recovery. Attempts have been made along several lines which I cannot do more than briefly outline.

Cultivation of naturally immune varieties—These are rare and in general the immunity to be of commercial value must be transferred by appropriate breeding to a newly built up variety. Success has been obtained with the Long Chinese variety of cucumber against cucumber mosaic. The sugar cane industry is to-day built up on two varieties—"Uba" resistant to mosaic and "PoJ 213" resistant to streak. The result has been an enormously increased crop which with our present day economics has resulted in widespread distress.

Cultivation of carriers—This has been, unconsciously, the policy of potato breeding for the last fifty years at least. A good variety is one that reacts but mildly or behaves as a carrier to the more prevalent virus diseases. It is the behaviour of the variety in the second and subsequent year to infection which determines its future utility. No variety withstands all virus attack, nor any that of the Y virus without some, and generally considerable, damage.

Good husbandry—The eradication of weeds, which are in many cases virus carriers, especially the wild *solanum* species, the thorough cultivation of head lands and removal of hedges that shelter insects, above all, the destruction of "ground keepers"—i.e., potatoes or "roots" left in the earth after the harvest—are all of value in keeping crops free from virus infection. Other treatments have been directed against the insect vector. In America large enclosures covered with a muslin of 22 mesh to the inch have been erected over areas as big as 32 square rods. Naturally such inclosures can only be used for special seed crops and need very careful supervision lest they act as forcing houses for aphids. Sprays have been tried but so far as the potato crop is concerned it would need very frequent application of a nicotine emulsion to be effective. Roguing of crops and isolation of special cultures of plants are all used and can be very successful, they are however only practical on a small scale.

Vaccination—A new line of attack on the plant virus problem is being worked out in Cambridge. Following up the discovery that it was possible to vaccinate a plant against a severe virus an attempt is being made to prepare a suitable vaccine against the virus of the disease which troubles us most in the potato field—the Y virus. There is reason to hope that it may succeed. It has already been pointed out that nature herself makes use of protective vaccination in the potato, but that is not her only weapon. It is clear that if there is no focus of dispersion for a virus, there will be no spread. If therefore, a plant is so acutely susceptible to a particular virus as to succumb almost at once, and further it loses all vegetative power in its tubers as if it has any then not only is the patient eliminated but the disease also. This actually occurs in the

case of the potato variety *Epicure* which is at once the most susceptible one of the oldest and most vigorous variety of potato we have

Conclusion

Although the incidence of virus disease in our field and crops and glasshouses has undoubtedly increased there is no reason for undue pessimism. What is needed is more research on virus diseases and a closer understanding between the pathologist and the plant breeder. It is the latter who needs to realise that when by his breeding methods he gives us large and ever larger crops bigger and whiter fruits and the like, he has almost certainly discarded en route a number of hereditary genes which alone or in combination with others may be responsible for that vague but important character—constitution.

REFERENCES

- Barnard J K (1931) *Proc Roy Soc Series B* 109 360
 (1935) *Brit. J. exp. Pathol.* 16, 120
 Bayden R and other authors (1936) *Nature* 131 468
 Barr E (1907) *Ber. d. d. Ges.* 25, 410
 Bedson S P and Bland J (1932) *Brit. J. exp. Pathol.* 13 461
 Beijerinck M W (1890) *Zbl. Bakt.* 5 21 310
 Botjes, J G O (1920) *Thesis, Wageningen*
 Cayley D M (1928) *Ann. appl. Biol.* 15 870
 Chester K R (1936) *Physiol.* 26, 115
 Eagles, G H and Kordl, A H (1932) *Proc Roy Soc Series B* 2, 220
 Findlay G M and MacCallum F O (1937) (In press) *J. Path. Bact.*
 Gardner A D (1931) *Microbes and Ultramicrobes* London p 40
 Iwanowsky D (1900) *Zbl. Bakt.* 5 250
 Laidlaw P P and Kilford W J (1935) *Proc. Roy. Soc. Series B* 120 293
 Loeffler and Frosch (1908) *Zbl. Bakt.* 23 371
 Salazar A (1930) *Lentiv. Ferussacii* 22 450
 Maynard R N (1932) *Proc Roy Soc. Series B* 110 180
 — (1933) *Nature* 131, 468
 — and Le Pelley R (1930) *Proc Roy Soc Series B* 106 140
 Rheims, Frances and Smith J H (1931) *Ann. appl. Biol.* 18 471
 Smith K (1888) *U.S. Dept. Agr. Div. of Bot. Bull. No. 9*
 Smith K (1930) *Sci. Progr. Transl. Com.* 119 413
 — (1936b) *Sci. Hort.* 4 136
 Stanley W M (1936) *Phytopath.* 26, 306
 Swery Olive and Beverin, H. (1930) *Ibid.*, 20 189
 Thung T H (1931) *Ned. Ind. Natur. Congr. Java* p 450
 Wassenberg R. (1920) *Z. Forstb.* 26 555

MEDICINE AND THE LAW

Unlicensed 'Special Establishment'

LAST December the public control committee of the London County Council revoked the licence of Dr Stavros Constantine Damoglou for carrying on an establishment for massage and special treatment. The decision seemed to be based in part on statements that he represented himself as able to cure blindness in incurable cases. On being notified he disputed the Council's authority; it extended, he maintained to masseurs only and not to persons with medical qualifications. He wrote that he intended to continue to treat his patients by methods of his own invention as he had done for the years 1915 to 1931 without any licence. His patients he said consulted him as their last hope; he would stand by them to bring them hope relief and in many cases complete recovery. Dr Damoglou having preferred to defy the Council rather than to exercise his right of appeal the L.C.C. caused him to be summoned on March 17th at the Marylebone police court. It was admitted by the prosecution that in certain cases of blindness due to nervous disorder the defendant could be very helpful. As a medical man he could carry on his establishment without a licence if he produced a certificate signed by two registered medical practitioners to the effect that he was a suitable person. Dr Damoglou giving evidence said that he was a fully qualified medical man. He protested that his was not a massage establishment.

within the London County Council Act he treated his patients by solar ray and gave them advice upon diet; the great majority received benefit and many were cured. The magistrate imposed a fine of £10 with costs warning the defendant that if he committed the offence again the maximum penalty of £50 would be imposed.

Patient and Radiologist's Report

The Court of Appeal recently discussed the question whether a doctor is obliged to allow a patient to see a radiologist's report. The point arose on the appeal of Mrs. Rubra widow and executrix of Dr Henry Rubra, against the verdict of £5000 damages awarded to Mrs. Connolly for alleged negligence on the part of Dr Rubra in treating Mr. Connolly who died of tuberculosis in 1933. During discussion in the Court of Appeal Lord Justice Slesser referred to Mrs. Connolly's request to see a copy of the radiologist's report. She had received what the judge called a misleading reply. Lord Justice Greene then inquired whether it was the practice in the medical profession not to let the patient see reports of this kind. Mr. Thomas Carthew K.C. appearing for Mrs. Rubra replied that many members of the profession regarded these reports as confidential. It was he added in the discretion of the general practitioner who had sent the patient to the specialist to decide whether the patient should see the report or not. Lord Justice Greer the president of the court, doubted if there was any practice of keeping this information secret much must depend on the doctor's view of the intelligence of his patient. As Mr. Carthew observed a patient is in the hands of his doctor many patients might be seriously upset by being given the information.

The appeal was not concluded before the Easter vacation. When judgment is given we hope to discuss the case further. It has been a striking instance of the risks inherent in the new law when by a personal action now no longer dies with the person concerned. Mrs. Connolly's claim in connexion with the death of her husband was begun while Dr. Rubra was still alive. Dr. Rubra was then in bad health; he died not long afterwards. His widow obtained leave to continue the defence. In denying the allegations of negligence she may well feel that the position of the defence is prejudiced by the death of one who would have been the principal witness on that side.

PARIS

(FROM OUR OWN CORRESPONDENT)

SANATORIUMS OR SANATORIA

THE Anglo-Saxon observation that the French would rather be in the wrong than vague may be reconsidered in the light of a recent discussion in the French medical press over the respective philological merits of *sanatoriums* and *sanatoria*. The indiscriminate and alternating use of both terms in the Anglo-Saxon countries may perhaps be good enough for their natives with their weakness for irrational compromise and inaccurate and nebulous impartiality. The correspondence began with an (as it proved) ill advised attack on a writer who had committed himself to *sanatoriums*. Why had he not given expression to his classical education by writing *sanatoria*? The fat was soon in the fire and it was joined by numerous medical philologists endowed with a classical education spare time, hixographia, libraries and a sense of burning injustice one way

or the other. As a matter of fact, it was practically all one way—the *sanatoriums* had it by an overwhelming majority. It seems that while the adjective *sanatorius* is good Latin, *sanatorium* was coined so recently that it is not to be found in the dictionary of the Academy published in 1878. The 1935 edition of the same dictionary had, perforce, to mention *sanatorium* but added that the plural was *sanatoriums*. The Larousse dictionary hedges by mentioning both plural forms, but of course Larousse is nowhere in the presence of the Academy's dictionary. When the lists have been cleared after this battle, the turn will doubtless come of *serums* versus *sera*.

PATHOLOGY IN STONE

Senlis, which is 33 miles from Paris, has two very interesting museums, one of which contains a collection of some medical interest. It contains more than 300 Gallo-Roman ex-votive offerings representing different



Part of the collection

parts of the body. These were placed by patients before the altar in a temple erected to Mercury which stood close to the town. There are a number of heads, each with an expression of pain, since most of these are heads of women, it is thought that they were



Ex-votive offerings. Models of a foot, breasts and a heart

placed in the temple by sufferers from headache. Breasts, hands, feet, abdominal organs, and even hearts, are among these objects. Archaeologists declare that this collection is superior to the similar collection of ex-votives in Rome.

IRELAND

(FROM OUR OWN CORRESPONDENT)

COLLABORATION BETWEEN HOSPITALS

A GENERAL meeting of the Irish National Association of Hospitals was held in Dublin on March 16th, with Prof. T. G. Moorhead, the president, in the chair. Some forty or fifty institutions were represented. The object of the meeting was to consider the draft memorandum and articles of association. It was soon made clear that some of the representatives present in particular those representing some

of the voluntary hospitals of Dublin, were nervous lest some of the powers proposed to be given to the association should interfere with the independence and autonomy of individual institutions, and various amendments were carried which tended to limit the powers of the association. Agreement was arrived at on the several points raised, and it was arranged that the draft memorandum and articles should be considered again at a meeting to be held in the last week of May. The objects for which the association is established are (a) to maintain an information bureau, (b) to provide opportunities for discussion, (c) to publish papers and reports of conferences, discussions, and proceedings connected with hospital management and administration, (d) to coöperate in any movement for the prevention, treatment, and cure of disease, and for the provision or extension of facilities for hospital treatment, and (e) to undertake any other work that may seem desirable to promote the welfare of patients and those engaged in their care, or the improvement of "hospitals of every description in Ireland or elsewhere." The association, however, is not to make any recommendation in regard to the internal administration of any hospital or in regard to any particular mode of therapy or the treatment of any patient or patients.

THE HOSPITAL SWEEPSTAKES

The twentieth draw of the sweepstakes in aid of the Irish hospitals was held on March 15th and 16th. The gross receipts, and also the proportion available for the hospitals, showed a rise over recent sweepstakes, being in fact the highest since the corresponding sweepstake of 1935. The aggregate sum collected for the hospitals from the twenty sweepstakes is a little over £2,500,000, of which about a third has been disbursed. The retention of so large a sum as £7,000,000 in the hands of the trustees has given rise to a certain amount of criticism. The Government, however, with the aid of the Hospitals Commission, wishes to make a thorough survey of the whole hospital problem in the country, in order that a satisfactory system may be evolved and established, and it is unwilling to allow the funds to be dribbled out prematurely in temporary projects. Moreover it is understood that the Government wishes to make the future maintenance of the voluntary hospitals secure by adequate endowment before it authorises the erection of large buildings. It is clear that hasty action might be dangerous, but it is hoped that the Government may soon make its decision on some of the more urgent parts of the general problem. The increasing pressure on the Dublin voluntary hospitals in particular demands early consideration.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

ADMINISTRATION OF PUBLIC HEALTH SERVICE

RATHER more than a year ago President Roosevelt appointed a committee to examine the desirability of reorganising the executive branch of the federal government. In his message to Congress of Jan. 12th the President presented this committee's report. Among its very comprehensive proposals is the establishment of twelve major executive departments to carry out functions that are now performed by more than a hundred independent agencies, administrations, authorities, boards, and commissions. On

of these departments would be that of Social Welfare to administer Federal health, educational and social activities. Some medical organisations are already protesting against the transfer of the public health service from the Treasury department to such a bureau. They fear no doubt that a medical service would be placed under the direction of some lay social worker. While it is true that a layman who thinks he knows something about public health administration might be a poor exchange for a secretary of the Treasury who knows he knows nothing about it still the service is even now in charge of a lay woman Miss Josephine Roach assistant secretary of the Treasury for whose appointment all public health workers are grateful. The gain to health administration of having all public health functions now scattered through half a dozen different departments gathered under a single department chief would be enormous.

SCHOLARSHIPS FOR PRACTITIONERS

The Commonwealth Fund has published its eighteenth annual report, recording the expenditure

of some two million dollars in accordance with the desire of its founder Mrs Stephen V Harkness to do something for the welfare of mankind. Those in charge of the Fund are strongly persuaded of the value of post graduate education in medicine. Scholarships designed not to make specialists but to enable family doctors to catch up with modern medicine have been granted to 379 physicians to study at Harvard Tulane Vanderbilt and other medical schools. Promising undergraduates have also been given scholarships on the understanding that they enter practice in towns of less than 6000 population.

Thirty-one British university students have been invited to spend two years in the United States as fellows under the Fund. Prof W L Bragg of the University of Manchester has been elected to the British committee of award that selects these fellows. It is said that former fellows have been busy during the past year both in writing about American affairs for British readers and in broadcasting from Great Britain to the United States.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM A TADDYGADDY

I

Tinker tailor soldier sailor
Rich man poor man taddygaddy thief

"I dressed him and God cured him" So wrote Ambrose Paré, over and again in his case book. What a lot it tells us of the man and in how few words. He was a great surgeon but he was much more than that he was a great doctor. Often when bored or depressed by the importunities of patients and their friends I dip into his book in search of refreshment, and never in vain. There is always something fresh. He was a gentle person a kindly person and he carried in his pocket a pen that could sting: a tool very necessary to him for he was a pioneer in days when pioneers were not popular. Eager for surgical reform he met bitter opposition but he met his critics on more than equal terms. How he did it we can read for ourselves in his description of how he came to realise the ill effects of boiling oil as a dressing for gunshot wounds with his conclusion. Then I determined never again to burn thus so cruelly the poor wounded by arquebuses. That determination it need hardly be said met with the hearty disapprobation of the orthodox the physicians who were very superior indeed the surgeons of the long robe who would not condescend to operate. Paré a barber surgeon was not tied to convention as were those more magnificent ones and felt himself free to attack not only the boiling oil methods but the use of the actual cautery. Confronted by bleeding gunshot wounds he insisted on the use of the ligature in place of red hot irons and was denounced as a surgical heretic. There are some of us who can remember the battles that raged around the question of antiseptics, and later asepsis. They were fierce enough but somehow they lacked the picturesque quality of Paré's controversial style. Perhaps that was fostered by his circumstances. He spent most of his time on or near the battlefield in days

when battlefields were spectacular and for many years he was court doctor during a highly coloured period of history. Catherine de Medici and her sons were his patients. It was owing to her good offices that he, a Huguenot, survived the Massacre of Saint Bartholomew. I like to feel and I think with reason that the friendship existing between Catholic queen mother and Huguenot court doctor was based upon the outstanding honesty and charm of the man.

* * *

Why was it that surgery as Paré found it was so horrifying? For that matter it was horrifying for centuries after him. It is on record that in Italy in the thirteenth century three hundred years before his time *asepsia* was practised and general *anæsthesia* employed. And not only in Italy. Tom Middleton the English poet dramatist, wrote in the very early sixteenth century:

I'll imitate the pities of old surgeons
To this lost limb who ere they show their art
Cast one asleep then cut the diseased part

The doctors had forgotten but the poets had not forgotten. Nor had the common people. What had caused the doctors to forget? That is one of the greater mysteries in the history of our craft. Why did doctoring once gentle become the crude thing that it undoubtedly did? How was it that the nursing sisters of Rahere's foundation gentlewomen living according to religious rule were replaced by those terrible women of whom we may read over and over again right down to the days of Dickens and concerning whom it was found necessary to lay down rules in at least one great hospital forbidding them to drink or dice with their patients? It has been suggested that the Black Death which swept away so many and so much succeeded in submerging medical culture. It is a suggestion worthy of consideration. We know that it affected terribly the members of our kindred calling the clergy. The best of both doctors and priests who stuck to their

posts perished. Those who remained lost the confidence of the people. In Germany so little were the doctors regarded that we find an edict was fulminated compelling plague patients to take the medicine ordered by the doctor or suffer the consequences—suspension on a gibbet, after death, with a coffin. We may smile, forgetting the popular sentiment of that day. That the doctors had “lost face,” as the Chinese put it, is evident. But there was more in it than just that. The best of the doctors were dead. Their teachings were forgotten or went unheeded. Men did actually forget. And of our brethren the clergy it is recorded that there arose parish priests who could not so much as interpret in the common tongue the words of their mass books. The need for men was urgent: the supply of suitable men was just simply not there. As the direct consequence of a great catastrophe ignorance took the place of knowledge.

* * *

For centuries after the coming of the Black Death medicine was a matter of crude ignorant horror. King Charles II, happy during his days of well being with the Spirits of Skull with which he liked to experiment, died slowly under the ministrations of thirteen doctors, all doing something different, and everything unpleasant. Queen Anne's entire family perished. The Princess Charlotte, daughter of that queer person who afterwards became King George IV, was hurried to untimely death by court doctors whose idea of treating a delicate young married woman was to bleed and purge, and then bleed and bleed and bleed. Poor girl, it is no wonder that when her baby came she and it passed out. And even so the orthodox doctors refused to learn. A wise man rediscovered general anaesthesia. He suggested that it might be used to mitigate the pains of childbirth. The orthodox shook their heads and muttered into their beards this and that about “the curse of Eve.” It was the will of God so they asserted, that women should bring forth children in agony. But the Queen, Victoria of blessed memory, knew better. When the next little prince or princess was due she spoke the word. Forthwith she was given the pain destroying essence to sniff. Women owe, and have owed, to Queen Victoria a great deal more than they, perhaps, have ever realised. She overruled the prejudices of the doctors who seemed to think that pain, suffered by others, was a good thing in itself and divinely ordained. She put her foot down hard, as was her

way. No doubt, common sense would have prevailed in any event, but she hurried matters along.

* * *

I feel that we family doctors miss a vast deal by not digging back into the past. We are all panel doctors now, and we assert that we are too busy to read. We leave that to the consulting people of Harley street or wherever it is. It is a poor plea. Harley street has no more leisure, and probably no more inclination, for reading than we have, or ought to have. We G.P.'s (I prefer the old time word, Taddygaddy) have no right whatsoever to shelter behind the excuse of “no time.” We have time for golf, for bridge, for motoring shop—that devasting exercise. Why not time for reading? There is so much worth digging into. How many of us, I wonder, have discovered the *Regimen Sanitatis* of Salerno? It is a storehouse of medical common sense, and was written a very long time ago, nobody knows by whom. Fashioned originally in rhyming dog Latin, there is a rhyming English translation which anybody with a few shillings to spare may buy for himself. It is good for us to read rhyme (I say nothing of poetry), for it serves to remind us of our student days and the rhyming aids to memory which were such very potent helps in time of trouble. Do you remember?

Tamarinds figs prunes and senna,
Cassia pulp and coriander
With sugar water and liquorice
To make the filthy stuff taste nice

That sort of thing. Why it should linger in my memory I have no idea. Nearly fifty years have gone by since I first heard those lines in the materia medica museum of my school. The information they convey is of no conceivable value to me, but the memories they stir are of a value that may not be counted. So with the Salerno rhymes. They tell of a time when the practice of medicine was something to be taken not too seriously when it was very much a matter of joyous common sense.

If thou to health and vigour wouldst attain,
Shun weighty cares—all anger deem profane,
From heavy suppers and much wine abstain
Nor trivial count it, after pompous fare,
To rise from table and to take the air
Shun idle, noonday slumber, nor delay
The urgent calls of Nature to obey
These rules if thou wilt follow to the end,
Thy life to greater length thou mayst extend.

PANEL AND CONTRACT PRACTICE

The London Figures

According to statistics submitted to the London Insurance Committee the number of persons entitled to medical benefit in London at the end of 1936 was 1,901,746 as compared with 1,871,321 in the previous year. During the same period the numbers on the lists of insurance practitioners have increased from 1,774,755 to 1,836,822. The number of practitioners on the committee's medical list was 2162 and the average size of their insurance practices was 842 persons. There were 1063 chemists under contract with the committee at the end of 1936 who are carrying on business at 1204 establishments within the county and 391 outside.

More Dispensing

The cost of providing medicines for insured persons has increased both as a whole and per unit. During 1936 8,006,825 prescriptions were issued in London,

costing £296,391 as compared with 8,561,402 in 1935 costing £279,033. The average cost per prescription rose from 7 82d in 1935 to 7 91d in 1936, the average number of prescriptions per person from 4 85 to 4 99, and the average cost per person from 3s 1 93d to 3s 3 43d. Reference to the table giving the figures from 1927 to 1936 shows that the increase has not been continuous during the decennium. In 1927 8,743,249 prescriptions cost £297,605, the average cost of each of the 4 92 prescriptions per person being 8 17d and the cost per person 3s 4 16d. Comparing these figures with those for 1936 it will be observed that while a quarter of a million or so more prescriptions were issued in 1936 to an insured population approximately 25,000 higher than in 1927, the total cost of the prescriptions was less by something like £1000. The most abstemious year of the period was 1930 when the number of prescriptions was 8,129,035 and the cost £258,522. In that year the average

number of prescriptions per person was 4.31 the average cost per prescription 7.63d and the cost per insured person 2s 8.80d

Prescriptions for insulin numbered 34,027 or 16,276,700 units for an average of 1247 patients per month the total value being £6717

Disallowed Prescriptions

Last year 464 prescriptions were disallowed in respect of articles which were not prescribed appliances and 79 in respect of preparations which do not form part of medical benefit. Of the disallowed articles 51 were finger or thumb stalls 49 were non-scheduled dressings 48 thermogens and capsicum wool 34 glass tubes and rods 25 hypodermic needles (not for insulin) 22 elastic hosiery 20 atomisers inhalers sprays, and the like. The favourite however was eye shades which were disallowed 83 times. Other disallowed appliances were arch supports breast pump corn pads douches forceps funnels hypodermic syringes (not for insulin) litmus paper nipple shield powder insufflator rubber gloves spinal jacket (not according to schedule) spirit lamp

apertum flask syringes temperature charts clinical thermometer trusses vaccination pads and shields and wrist straps. Of the disallowed preparations 29 were for saccharin tablets 17 for charcoal biscuits 13 for casein glycerophosph 0 for virol 3 for roboleine and in addition single prescriptions for fumigating pastilles lactose peptonising powders rennet tablets burnt sugar and shampoo powder. The total value of the 543 disallowed prescriptions was only £38.18s.

Practitioners' Fund

Insurance committees have now been notified of the final apportionment of the Central Practitioners' Fund (England) for 1936 which has been determined at £8,868.85s. London's share of the fund (being 13.1858 per cent) is £337.02s which allows of a distribution of £44,172 over and above the amount provisionally determined earlier in the year. This is nearly £14,000 more than the corresponding sum distributed in respect of the year 1935 and the result will be that London practitioners will receive for 1936 9s 2.63d per unit of credit as compared with 9s 1.17d for 1935.

THE SERVICES

REORGANISATION OF THE INDIAN MEDICAL SERVICES

WHEN provincial autonomy comes into operation on April 1st under the new constitution, considerable changes in the organisation, distribution and terms of service are to be made in the military medical services in India. These are the result of a prolonged investigation extending over more than three years into the whole organisation for both peace and war.

The strengths of the three military medical services in India—the R.A.M.C. in India, the military branches of the I.M.S. and the I.M.D.—will be fixed so as to provide for the minimum medical requirements of British and Indian troops in peace time. There will still be a civil branch of the I.M.S. recruited as hitherto from the military branch and consisting of not less than 220 officers of whom 106 will be British. It will maintain a war reserve on which the Army in India must rely for its increased requirements in an emergency, attend British members of the superior civil services and their families and fill posts under the Central Government and the Crown representative. A new list of posts reserved for I.M.S. officers in civil employ has been adopted involving a reduction from 207 to 172 for British and Indian officers, but the present rights of officers already in civil employment will be fully preserved.

Recruiting for the I.M.S. will still be by nomination on the recommendation of a selection board held four times a year as hitherto. Indian members will be recruited in India and will normally be given short service commissions for five years after which selection will be made for permanent commissions from among those who desire to continue in the Service. British members will be recruited in London and will be appointed to permanent commissions to fill European vacancies.

Revised rates of pay for future entrants have been introduced which will bring basic pay more into accord with Indian standards without materially altering the total emoluments received by British members of the Service who draw sterling overseas pay. At the same time the time-scale of promotion to major has been accelerated throughout by two years. Improvements have also been made in the

rates of pay drawn in the second, third, eleventh and twelfth years of service. An increased outfit allowance of £75 will be granted to new entrants and the maximum period of antedate granted for high qualifications and special experience is raised from 1 year to 18 months.

Six additional colonelcies will be provided on the military side of the I.M.S. and a suitable number of increased pensions equal to those of colonels will be eventually awarded to officers on the civil side.

An officer transferred to civil employment will be on probation for two years. Thereafter he will retain a right to revert to military employment under certain conditions until he has spent 7 years in civil employment or has had 17 years of total service. After this he will if it is agreed that he shall remain in civil employment be transferred to a special supplementary list and will not normally be eligible for military promotion above the rank of lieutenant colonel. This system follows that in vogue for other military officers in civil employ—e.g. in the Indian Political Department.

ROYAL NAVAL MEDICAL SERVICE

The Admiralty announce that the appointment has been approved of Surge Rear Admiral Percival T. Nicholls, O.B., K.H.P., to be Medical Director General of the Navy in succession to Surge Vice Admiral Sir R. W. Basil Hall, K.C.B., O.B.E., K.H.P., to date July 2nd 1937.

Surge Comdr. T. Madill to *President* for course and I. J. A. The O'Rourke to *Drake* for R.N.B.

Surge Comdr. (D) J. L. Edwards to *Drake* for R.N.B. and T. F. Brover to *Drake* for R.N. Hospital, Plymouth; and T. Hunt to *St. Angelo* for R.N. Hospital, Malta.

The following officers qualified at the examination for promotion to Surge Comdr. held recently: Surge Lt. Comdr. F. G. B. Crawford, D.A., Newbery, J. Keovil, F. Dolan, F. W. Besley, and T. L. Cleave.

Surge Lts. (D) L. C. Jenot to *Cangas*; W. A. Dickie and F. S. Roff to *Pembroke* for R.N.B. and W. I. Forrest to *Victory* for R.N.B.

ARMY MEDICAL SERVICES

The Army Council have decided to name the new barracks about to be built for the Royal Army Medical Corps Depot and Army School of Hygiene at Aldershot the "Keogh Barracks" in memory of the late Lieut. General Sir Alfred Keogh, G.C.B., D.C.O., C.H. That

(Continued at foot of next page)

CORRESPONDENCE

INFLUENCE OF SCHOOL ROUTINE ON THE GROWTH AND HEALTH OF CHILDREN

To the Editor of THE LANCET

SIR,—In view of the interest which is being aroused by Mr John Allan's paper in your issue of March 13th, would it not be desirable to quote more fully from the context in the report referred to there—i.e., "The Health of the School Child" for 1935? On pp 12-13, for instance, it is stated that

"The only practical measurements in common use which, so far as we know, can help the assessment are those of height and weight. But stature and weight, though important, may, as was shown last year, by themselves be fallacious guides to the nutritional state, and must be regarded simply as an important part of the evidence to be considered by the medical officer in forming his general impression. Frequent measurements of height and weight are, however, of great value inasmuch as they are the best indices we have of the rate of growth."

The italics are mine, but the extract quoted, and indeed the actual references in the report to weight, height, and growth, and conclusions derived therefrom do not give me the impression gained from it by Mr Allan, that

"estimates of nutritional states are now being based on clinical observations only, standards of height and weight for age being no longer applied."

With regard to the intervals occurring in the increase of height and weight of children which are revealed by more frequent measurement, Corry Mann has drawn attention to this, but he regarded such cyclic or irregular growth periods as normal, and based his conclusions as to progress on observations taken at longer intervals. He evidently associated gain in weight with rest periods, and loss with physical activity.¹ Mr Allan's more minute investigation of

¹ Mann H C C (1926) *Spec Rep Ser med Res Coun Lond* No 105 p 12

these periods, covering 14 years, and their evident association with periods of activity and rest in school environment is therefore particularly interesting, whether or not they are held to be "normal" reactions to the pressure of the child's physical and mental education. As to whether such pressure, at any particular school, is in the long run good or bad for the child needs further investigation. If merely on the lines of physical standards, these would need to be applied at longer intervals, even up to that between the date of entry and leaving school, while such development as increased vital and mental capacity are not necessarily accompanied by linear growth or increase in weight, and yet they may be accepted as evidence of cause and effect of an improved nutritional state.

As to children in one school being more stunted than in another, this can and should be verified by applying age height standards, but it is certainly expedient to observe the parents before seeking a cause in the school routine. There is an example of such a high proportion of small children in a day school near London. The parents are of small stock, and the grandparents are migrants from the north. There is also a type of child known to the children's hospital as the "Austin 7" feeding it with gland extract or milk does not convert it into the "Rolls Royce" type.

As these small children can and do become efficient people, and more pathological forms of dwarfism occur before school entry, it seems that, beyond securing the stimulus afforded by milk, it is most practical to take the height attained as the basis for other measurements, and if the height weight standards are to be applied, they should be correlated by some reference to cross section, of which chest circumference is a rough expression. It can be easily shown that with equal sitting height, weight varies directly with chest circumference, and thus is evidently only

THE SERVICES (continued from previous page)

very distinguished officer was Director General Army Medical Services from 1905 to 1910 and again during the war from 1914 to 1918.

The following changes are announced—

Col H H A Emerson DSO, was promoted supernumerary Major General on March 26th and will continue in his appointment at the War Office as Director of Hygiene.

Col J W L Scott, DSO was promoted to Major General on March 26th, and leaves the War Office to be Deputy Director of Medical Services Eastern Command.

Major General FitzGerald, CB, DSO, vacated medical charge at Horse Guards on March 26th.

Col F Casement assumed the post of Deputy Director General Army Medical Services on March 26th.

Col S W Kyle is the new Assistant Director General at the War Office.

The War Office announces that applications are invited from medical men for appointment to commissions in the R.A.M.C. Candidates will be selected for commissions without competitive examination, must present themselves in London for interview about April 22nd, and normally must not be over the age of 28. Successful candidates will be given short service commissions for five years and then may apply for a permanent commission. Those not selected will retire with a gratuity of £1000. Particulars and forms of application may be obtained on application either by letter or in person to the Assistant Director General Army Medical Services the War Office London SW 1.

ROYAL ARMY MEDICAL CORPS

Capt J I Swain to be Maj
C M Arthur to be Lt (on prob)

SUPPLEMENTARY RESERVE OF OFFICERS

J Montgomery to be Lt

TERRITORIAL ARMY

The King has conferred the Efficiency Decoration upon the undermentioned officers under the terms of the Royal Warrant dated Sept 23rd, 1930. Lt Col W L M Gabriel, Lt Col K Pretty, and Maj and Bt Lt Col G Whittaker.

Hon Maj Gen Sir Richard H Luce KCMG, CB, VD TD, vacates the appointment of Hon Col R A M'C Units 46th (N Mid) Div.

Lt N J Nicholson to be Capt

Lt S R Trick to be Capt

Lt D P MacIvor, MC, late 12th Bn A and S H, to be Lt

Capt W F Mulvey and J W Graham resign their commissions

Lt A McC Campbell, from 8th Bn A and S H Scouts, to be Capt

Capt T H Wilson from Univ of Lond Contgt (Med Unit) Sen Div, OTC, to be Capt

P O'Donnell to be Lt

TERRITORIAL ARMY RESERVE OF OFFICERS

Maj W Barclay, MC, from Active List, to be Maj

Capt J W Lobban from Active List, to be Capt

H D Kendrick to be Lt (Army Dental Corps)

INDIAN MEDICAL SERVICE

Majs to be Lt Col: D Sanval, S M A Faruq, B B Gadgil, D P McDonald, A N Sharma, P Basu, and J J Rooney.

Lt (on prob) J G Thomson to be Capt (on prob)

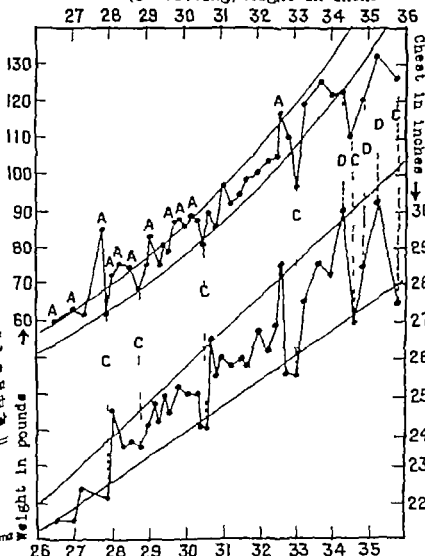
an expression of the ordinary physical relationship between height cross-section area volume and weight. Efforts directed to increasing chest circumference might conceivably arrest growth in length temporarily but lead to increase in weight in the next rest period. In the accompanying illustration one might expect the physical development of other boys in the same school to be along the lines of their

Nutritional Survey Summary Record

(Series J B M 100 Boys)

Residential school estimate of—	A	B	C	D	Points
1. Nutrition	10	253	36	2	261
2. Home condition	0	204	04	32	76
3. School output	103	140	45	1	313

Trunk (or sitting) height in inches



combined table and graph showing the desirability of considering simultaneously the various complementary factors in nutrition and growth. Just as the temperature and pulse chart is usually considered in conjunction with the clinical notes in a hospital record.

schoolmates, or at least between the minimum and maximum boundaries traced by 1000 more children in the same district. It might well take place in cycles of height breadth and weight increase. The low weights marked C appear to be sufficiently explained by delayed chest development those marked D are more likely to be due to malnutrition. As the latter are among the elder boys the stress of puberty in addition to other anxiety causes have been considered in detail in three subheadings of each of the three divisions of the summary. Under each subheading the boy can get an estimate as follows: A = excellent (2 points) B = satisfactory (1 point) C = unsatisfactory (1 point) D = bad (-2 points). These details are shown in the Table. I am Sir yours faithfully

J E CHIESMAN

Medical Inspector Kent Education Committee.
Dumfries March 20th

SURGICAL BRUCELLOSIS

To the Editor of THE LANCET

SIR—On my return from South Africa I have read with great interest Dr J I Edwards's report in your issue of Feb 13th of a case of fixation abscess of bone due to brucella. This is the first case of what might be termed surgical brucellosis occurring in this country of which I have heard but there are many reports in the literature of such occurrences in the Mediterranean area due to infection with *Brucella melitensis* and there have been a few such reports in recent years in connexion with both the *melitensis* and *abortus* varieties of brucella. Thus Botreau Roussel and Huard reported in 1931 a case of osteomyelitis of the lunate bone of the wrist in a soldier of 20 probably due to *Br. melitensis* the infection having been acquired in the course of a local epidemic of undulant fever in man and abortion in goats in the village of La Souche (Ardèche). Hardy Jordan and Borts reported in 1936 a series of cases of undulant fever in Iowa which included osteomyelitis of various long bones and one of the small bones of the wrist. Griliches reported a case in 1930 from Switzerland in which the patient, a farmer of 20 developed a small abscess on the dorsum of the right foot from which *Br. abortus* was grown in pure culture.

It is interesting in this connexion to note also that local abscess formation in the conditions known as poll-evil and fistulous withers are quite common in horses in America Germany Holland and other countries, and pure cultures of *Br. abortus* are usually grown from these local abscesses.

References—Botreau Roussel and Huard P. (1931) *J. Hyg. Soc. Nat. Chir.* 57 1519 Hardy A. J., Jordan C. F. and Borts L. H. (1936) *J. Amer. med. Ass.* 107 550 Griliches R. H. (1930) *Schweiz. med. Woch.* 60 433

I am Sir yours faithfully

WELDON DALRYMPLE CHAMPNEY

Ministry of Health Whitehall S.W. March 23rd.

ERGOTAMINE TARTRATE IN MIGRAINE

To the Editor of THE LANCET

SIR—As a very great sufferer in past days from this dyscrasia, I suggest to Dr Kelly and warn your readers to put no trust in drugs or at present any product from a laboratory. Years ago I asked a distinguished physician now in the shades how about your migraine? He dramatically replied: Better. I have passed the change of life. I am well on in the seventh decade and can answer as he did. The change begins in the mid fifties. I believe the only remedy is: a dark well ventilated room long drinks of water and with 5 minute occasional intervals, a 24 hours sleep. The outstanding point of this procedure is, there is no drug aftermath.

I am Sir yours faithfully,

W BURNOUGH COSENS

Tunbridge Wells March 30th

To the Editor of THE LANCET

SIR—From my personal experience of the relief of migraine headache by ergotamine I can add one small point to those enumerated by Dr Kelly. In my own case I was for several years almost incapacitated for three days every fortnight since taking Femerin hypodermically about 60 attacks have been aborted with no failures. The attacks however are more frequent than they used to be.

I have found that the beneficial effect of the drug is aided by taking food at the same time. Whereas

when I first used femergin I frequently had to repeat the dose in 1-2 hours to stop the attack, I now find that one dose is enough if food is taken at the same time

I am, Sir, yours faithfully,

ELIZABETH L. FLEMING

Upper Wimpole street W, March 29th

HYPOGLYCAEMIC SHOCK IN THE TREATMENT OF SCHIZOPHRENIA

To the Editor of THE LANCET

SIR—Being partly responsible for the introduction of hypoglycaemic shock for schizophrenia into this country and the first to use it here, I welcome Dr Russell's clear cut article in your last issue (p 747),

and agree with his conclusions. Eleven cases have been treated at the Royal Edinburgh Mental Hospital since March, 1936, and in the 526 periods of hypoglycæmia no alarming incidents have occurred. In certain cases of prolonged coma there is deficient absorption of the glucose feed by the stomach, when larger amounts of intravenous glucose should be given. In my experience after shock is only likely to occur when more than 1 ccm of adrenaline has had to be given, or when the patient has refused his ordinary meals after the feed. Smoking should not be permitted until one hour after the feed, as it tends to precipitate the hypoglycaemic symptoms, or cause a return of these.

I am, Sir, yours faithfully,

Edinburgh March 28th

H PULLAR STRECKER

PARLIAMENTARY INTELLIGENCE

FACTORIES BILL IN COMMITTEE

THE Factories Bill was further considered by a standing committee of the House of Commons on March 23rd.

DA NGEROUS CON DITIONS

On Clause 38 (which provides that if on complaint by an inspector a court of summary jurisdiction is satisfied that any part of the works, machinery, or plant used in a factory is in such a condition, or so constructed, that it cannot be used without risk of bodily injury, or any work is carried on in such a manner as to cause risk of bodily injury, the court may prohibit the use of that part of the factory or prohibit its use until it is repaired or altered, or require the owner to take steps for remedying the danger) Mr SILVERMAN moved an amendment providing that the clause should be mandatory instead of permissive by leaving out the word "may" and inserting the word "shall". He said that the court should not be left with discretion in the matter of making an order where they were satisfied that an offence had been committed.—After discussion, Mr LLOYD said it did not make any difference whether the word "shall" was inserted, though he feared that it would not have the result expected by supporters of the amendment.—The amendment was agreed to.

Mr RHYS DAVIES moved an amendment to leave out "danger to life" and to insert "risk of bodily injury". Under the clause as it stood he said the court would only be entitled to make an order if the inspector was satisfied that a workman was about to be killed. He wished to enable the court to make an order when an inspector was satisfied that a workman was liable to bodily injury.—Mr LLOYD said that a tremendous power was given under the clause and it should be circumscribed within proper limits. He accepted the broad principle, but the amendment went too far. He thought it would be better if they made the amendment read "risk of serious bodily injury".—The amendment was agreed to in this form.

On Clause 39 (Power of court of summary jurisdiction to make orders as to a dangerous factory) Mr RHYS DAVIES said that amendments had been put down on danger to health. He wished to know whether the interpretation of "bodily injury" in the interpretation clause included injury to health.—Mr LLOYD: Yes, Sir, that is included in the definition clause.

DRINKING WATER

On Clause 40 (Supply of drinking water) Mr BURKE moved an amendment to provide that when the supply of drinking water did not consist of a drinking jet there should be provided and maintained at every point of supply a reasonable number of clean drinking vessels. He said that those who had experience of factories knew how very inadequate the

provision often was for the supply of water to the workpeople, and realised the advisability of ensuring that in addition to the water-supply being adequate the drinking vessels themselves should be kept clean. He would prefer that instead of having any drinking vessels at all there should be at suitable points in the factory a basin with a jet of water. That ensured cleanliness for everyone using the jet. It would be better in many cases for the workers to go thirsty all day rather than use over and over again, one after another, one dirty can which they could not wash properly, unless they washed it in the water they were going to drink. From the health point of view he felt that this clause was weak and might be easily strengthened at very small cost.

Mr LLOYD said he agreed with the mover of the amendment that it was important to have proper supplies of drinking vessels. In his experience he much preferred the jets. Provisions rather similar to those contained in the amendment were inserted in the Drinking Water Welfare Order which wide application to factories, but not to all, particularly not to small factories. In this Bill term factory applied to something which they had not always been accustomed to regard as a factory, but rather as a workshop. A dressmaker's establishment with a dressmaker and one assistant actually a factory under this Bill. They had to be careful to consider such small places as that. While accepting the principle he could not accept the wording of the amendment. He would suggest that the amendment should read "Except where water is delivered in an upward jet, from which workers can conveniently drink, one or more suitable cups or drinking vessels shall be provided at every point of supply with facilities for rinsing them drinking water". The last part was intended apply to small establishments.

Mr BURKE withdrew his amendment in favour of the amendment suggested by Mr Lloyd.

CLEANLINESS

On Clause 41 (Washing facilities) Mr BURKE moved an amendment the object of which he was to extend washing facilities to every factory in the country.—Sir E GRAHAM-LITTLE said that it was not only in the factories where dirty and offensive materials or processes were used where washing required. It was just as essential in factories where cleanliness was of paramount importance in processes, such as in the preparation of food. great factory in Chicago the employees who packed sandwiches were actually manicured before going into the factory. If the Under-Secretary accepted the requirements of this amendment would move that the word "cleansing" should be substituted for the word "washing".—Mr BURKE said that food was being prepared in all kinds of and canned or bottled in many factories, and tremendous advantage of suitable washing facilities.

had been proved in the packing industry. As a result of consultation with the Home Office a Washing Facilities Order was issued and led to vast improvement both in the food trade itself and in benefit to the men and women engaged in the industry.—Mr. WELSH said that he wished the committee could see the changes that had taken place in the miners and particularly the young men as a result of the provision of pit baths.

Mr. LLOYD said that the Government accepted the view that the provision of washing facilities was very important as a general question in view of the rising standards of life of our people. But there were certain difficulties involved. Washing facilities were provided under the Dangerous Trades Regulations and Welfare Orders and a considerable number of industries were covered. This clause was really an attempt to carry these processes further by giving a quicker method of extending washing facilities to other industries; but after listening to the discussion that day he thought that the matter ought to be considered with a view to bringing forward wider proposals. He could not accept this amendment at that stage. This was an expensive part of the Bill. It would not be reasonable to require in every case the provision of elaborate washing facilities if they were not really going to be used. If the amendment was withdrawn he would undertake to go into the matter before the report stage with a view to widening the proposals in the clause.

The amendment was negatived.

Mr. SMITH secured an amendment that a sufficient supply of soap and clean towels conveniently situated should be provided under the clause.

On Clause 42 (accommodation for clothing) Mr. MANDER moved an amendment to provide that the clause should apply to all factories. He said if work people came to a factory no matter what the processes were that were carried on, and they were soaked through with rain facilities should be provided for drying their clothing before they went home.—Mr. LLOYD promised to look into the matter before the report stage.—Mr. VIANI said that many men working on buildings for example were compelled to work in very inclement weather. They ought not to be expected to work in wet clothes. Rheumatism was extraordinarily prevalent in the building trade, and he hoped that the Under-Secretary would try to meet this difficult point.—The amendment was withdrawn.

FIRST AID

On Clause 44 (First aid) Mr. BROAD said that as drawn the clause only provided for first-aid boxes in factories where mechanical power was used. He moved an amendment to remove that limitation. There were many dangerous operations in places where no mechanical power was used and minor injuries might lead to major trouble such as septic poisoning. It would be no burden for employers in factories without mechanical power to make such elementary provisions for first aid as could be found in any decent home in the country.—Mr. LLOYD said that in this case as in an earlier one which the committee had discussed they had to remember that the Bill covered very small establishments. Would it be reasonable to require the provision of a first aid box in a dressmaking establishment with one principal and an assistant? According to Home Office records there were small establishments where accidents occurred rarely or were unknown. In cases where dangerous operations took place in factories without mechanical power undoubtedly first aid boxes ought to be provided. But they could be required under the Bill through the safety or welfare regulations and he could assure the committee that in any such case the Home Secretary would require the provision to be made.—After further discussion Mr. LLOYD promised to look into the matter further and the amendment was withdrawn.

Mr. J. GRAHAM LITTLE moved an amendment to provide that the first-aid boxes should be examined

annually by a factory surgeon. He said that the inspection of first-aid boxes was as necessary as the inspection of fire appliances and they should be inspected as well as used by a competent person.—Mr. LLOYD said the Home Office did not think it was really necessary that the first-aid boxes in factories should be examined by a surgeon. The contents of the boxes were prescribed in detail by the Secretary of State under orders and therefore it was an easy matter for the factory inspector to make certain that the right ingredients were in the boxes.—Sir E. GRAHAM LITTLE replied that it was not so much the right ingredients as their condition. It was the aseptic character of the dressings which was required and that could not be estimated by simple inspection.—Mr. LLOYD said that that was a matter which he would consider further. The Home Office considered that the factory inspectors were capable of checking the contents of the boxes and he was advised that there was not much risk of deterioration of the contents for a reasonable period. He would however look further into the question of the aseptic part of the dressings. With regard to the qualifications of those who applied the first aid that again was a question of distinction between very small workrooms and large factories. It was conceivable that in a large factory it might be a reasonable requirement to have someone proficient in first aid although he was advised that a responsible person which was the term used in the Bill should be capable of dealing with most of the minor first-aid assistance which was necessary. He would however reconsider the question with a view to making some distinction between large factories where it might be reasonable to have someone experienced in first aid and cases where it would not be reasonable.

The amendment was withdrawn.

AN AMBULANCE ROOM IN EACH FACTORY

Mr. RHYES DAVIES moved an amendment to ensure that where more than 150 persons were employed in a factory a suitably equipped ambulance room should be provided and such arrangements should be made as to ensure the immediate treatment there of all injuries occurring in the factory. He said that there was always a danger unless there was an ambulance room where an injured workman could be properly treated that septic poisoning would set in. It was an astonishing fact that in this country for some reason he did not know whereas the health of the community had improved enormously the statistics of sickness and disablement arising from injuries showed an increase every year. His view was that speeding up had something to do not only with the rate of sickness but with the number of small accidents which were constantly occurring. He hoped that the Home Secretary would look with a kindly eye on this amendment.

Sir JOHN SIMON said that he looked on this amendment with a great deal of sympathy; the only question was the best way of doing it. When they came to the end of this clause they would have made provisions under which welfare regulations could be made dealing with ambulance and first-aid arrangements. Already under the existing factory code welfare orders had been made by the Home Office which required an ambulance room. The point about which he felt some doubt was whether they should lay it down in the Statute that where there were 150 workpeople there should be an ambulance room. He was advised that the question did not depend on the number of the workpeople. He urged that the better way of dealing with the matter was by welfare orders.

The amendment was withdrawn.

BUILDING IN SCOTLAND

In reply to a question by Mr. MATTHEWS in the House of Commons on March 23rd Mr. ELLIOT, Secretary of State for Scotland said the meetings had been held with representatives of employers and operatives representing practically all the organisations.

tions in the building industry in Scotland, at the first of which he was himself present. Information has been placed before the building industry showing the approximate amount of public work (including houses, schools, hospitals, &c., and building for defence requirements) that it is desired to carry out within the next few years. The representatives of the industry were asked to examine and consider whether the available supply of skilled labour in the different trades was sufficient to enable the various programmes to be carried out, and, if not, to suggest methods by which the supply could be increased. The representatives of the industry were prepared to make recommendations designed to secure such progressive increase in the number of skilled operatives as might be necessary, provided that assurances are given of reasonable continuity of employment. Under the provisions of the Housing (Scotland) Act, 1935, the Exchequer contributions at the present rates are payable for houses completed by March 31st, 1938, and the question of the rates for the three years immediately following that date must be reviewed in consultation with the associations of local authorities after Oct 1st this year. In view of the importance to local authorities of knowing what their financial position will be after March 31st, 1938, it was his intention, said Mr Elliot, to submit proposals to Parliament for the continuance of the present rates of Exchequer contributions under the Housing (Scotland) Act 1930, and the Housing (Scotland) Act, 1935, for the three years beginning on April 1st, 1938, that is to March, 1941. The Government were closely watching the position in regard to supplies and prices of materials, and will keep in touch with local authorities and producers in the matter. He was arranging, Mr Elliot added, for meetings with the associations of local authorities to discuss the question of planning these building programmes so as to ensure the maximum degree of continuity of progress. When these negotiations were concluded there would be made possible a marked improvement in the recent rates of house building by local authorities, and that as further operatives become available the rate could be progressively expanded.

Replying to further questions Mr Elliot said that the arrangement did not involve the abrogation of trade union rules, and that the present rate of assistance would be guaranteed for the lifetime of this Parliament.

NOTES ON CURRENT TOPICS

Cardroom Workers and Respiratory Illness

In the House of Commons on March 25th Mr STURGEON asked the Home Secretary whether he was now able to announce the names of the committee to be appointed to inquire if a workable scheme could be devised for providing compensation for cardroom workers disabled by respiratory illness. — Sir JOHN SIMON replied: Yes, Sir. The following is a copy of the Warrant of Appointment of this committee:—

I hereby appoint Mr W. D. ROSS OBE, M.A., LL.D., D.Litt., Mr P. N. HARTY, F.I.A., Mr T. HUTTON, Prof. GLOUCE R. MURRAY, M.D., FRCP, and Mr W. F. WACKRILL OBE, to be a committee to consider and report whether an equitable and workable scheme can be devised for providing compensation in the case of persons who after employment for a substantial period in cardrooms or certain other dusty parts of cotton spinning mills become or have become disabled by respiratory illness as indicated in the Report of the Departmental Committee on dust in cardrooms and, if so, to make detailed recommendations as to the provisions to be included in such a scheme, more especially as to the persons to whom benefit should be payable and the rates and conditions of benefit; the medical and other machinery for administering the scheme, the method of financing the scheme and its approximate cost. And I further appoint Dr W. D. ROSS to be chairman and Mr C. P. COURLEY to be secretary of the committee.

In the House of Lords on March 23rd, the Marquess of DUFFERIN AND AVA introduced a Bill to provide for the regulation of the fumigation of premises and articles by hydrogen cyanide. The Bill was read a first time.

In the House of Lords on March 23rd the Public Health (Drainage of Trade Premises) Bill was read the third time and passed.

In the House of Commons on March 23rd Mr BALDWIN, Prime Minister, presented a Bill to regulate the salaries payable to those holding certain Administrative Offices of State. It provided additional salaries for members of the Cabinet holding offices at salaries less than £5000 a year, a salary to the existing Prime Minister, pensions to those who have been Prime Minister, and a salary to the Leader of the Opposition. It also simplified the law about the capacity of those holding offices of profit to sit and vote in Parliament. The Bill was read the first time.

In the House of Lords on March 24th the Deaf Children (School Attendance) Bill passed through Committee. The House of Lords adjourned for the Easter recess on March 24th until April 7th. The House of Commons adjourned on March 25th until April 6th.

QUESTION TIME

TUESDAY, MARCH 23RD

Sickness and Ill-health in the Army

Mr SORESENSEN asked the Secretary of State for War how many were discharged from the Army through sickness and ill health during 1936, and how many of these received or would receive, either pensions or some kind of financial assistance. — Mr DUFF COOPER replied: During 1936, 1786 men were discharged from the Army Reserve as invalids. I regret that the information asked for in the second part of the question is not available but during the year referred to 1800 new applications for disability awards were preferred. Pensions, permanent and temporary, were awarded in 398 cases, and gratuity in 813 cases.

Slow-burning or Inflammable Films

Mr DAVY asked the Home Secretary whether in view of the changes that had taken place in the film producing industry since the case of the V.P. Pier (Folkestone) Syndicate, Limited, versus Reeve, which was decided in 1912 with reference to the meaning of slow-burning or non inflammable films, and the co-operation among local licensing authorities as to the application of same to present-day sound films, he would consider the appointment of a departmental committee to consider these difficulties and to advise and enable him to introduce legislation to clarify the position. — Sir JOHN SIMON replied: I do not think it necessary to appoint a departmental committee, as I propose to refer the question of slow burning or non inflammable films to an ad hoc committee on the Cinematograph Act, 1909, which I right hon. friend, the Secretary of State for Scotland, I am in process of constituting.

Mining Explosions in Britain and France

Mr ROWSON asked the Secretary for Mines if he could give comparative figures showing the number of explosions in the British mining industry and the French industry, and the number of persons killed in such explosions during the last 15 years. — Captain CROOKSHANK replied: There may be some doubt whether the figures are strictly comparable but they indicate that the French record in regard to explosions is proportionately so better than our own that the French Government has asked to give facilities for an investigation to be made of any differences in their conditions or practice. Investigators will be Major Hudspeth, Deputy Inspector of Mines, and another officer of my department, and they will leave for France as soon as the necessary arrangements can be made with the French Government. The following is a statement showing the number

explosions and the number of persons killed thereby at mines under the Coal Mines Act in Great Britain and at coal and lignite mines in France during the years 1920-1934

Year	GREAT BRITAIN		FRANCE	
	Explosions involving death	Persons killed	Explosions involving death	Persons killed
1920	16	20	3	4
21	17	19	4	25
22	14	73	3	5
23	10	60	2	0
24	18	35	1	1
25	11	20	1	1
26	6	5	1	2
27	11	72	4	13
28	16	38	—	—
29	13	34	4	36
1930	18	70	—	9
31	12	107	—	—
32	13	69	—	—
33	8	35	—	—
34	11	96	—	—

Note—Owing to the absence of detailed particulars of each separate accident in the case of France, there may be a few cases in which death was due to asphyxiation without an explosion having taken place

Grants for Slum Clearance

Mr WILFRID ROBERTS asked the Minister of Health whether a final decision had been reached as to whether or not housing grants for slum clearance would be payable after March 31st 1938, and whether only houses actually completed by that date would be eligible for Government grants.—Sir KINGSLEY WOOD replied: Under Section 109 of the Housing Act 1936 I am called on to review after Oct 1st 1937 in consultation with the Local Authorities the Exchequer contributions payable for slum clearance and the abatement of overcrowding. The section provides that contributions at the existing rates will be payable for houses completed by March 31st 1938. Local authorities will soon be letting contracts for houses which will not be completed till after that date and I have received a number of representations on the matter.

The completion of slum clearance and the abatement of overcrowding are vital elements in the health services of the country. I am anxious to preserve the continuity in this housing programme and to avoid the disturbance which might result from a position of uncertainty. I have therefore given some preliminary consideration to the matter. I cannot under the statute carry out my review or submit proposals to Parliament till after Oct 1st 1937 and these proposals must be made in the light of the facts as they then exist. When I do submit proposals it is my intention to include among them provisions under which the now existing rates of Exchequer contribution will continue without alteration for houses built in replacement of unfit houses or for the abatement of overcrowding which are completed by Dec 31st 1938.

Model Diet in Mental Hospitals

Mrs TATE asked the Minister of Health in how many mental hospitals in England and Wales the model diet for an entire four week period had been introduced as recommended in the 1924 Report of the Departmental Committee on Diets in Mental Hospitals.—Sir KINGSLEY WOOD replied: I understand a number of mental hospitals have adopted a dietary for a four week period though I am not aware of the exact number. The matter is determined by the visiting committee of the local authority and generally upon the advice of the medical superintendent. I am advised that the standards recommended by the committee on Diets in Mental Hospitals have been generally adopted.

WEDNESDAY MARCH 24TH

Medical Research in East Africa

Mr MATTHEWS asked the Colonial Secretary whether any steps had been taken as to the result of the recommendation of the Conference on the Co-ordination of the General Medical Research in East Africa that research should be directed to the social and economic development of the African

should be undertaken by the Medical Research Council.—Mr ORRISBY GORE replied: I assume that the hon Member is referring to the report of the conference held in January 1936. The recommendation of that conference was not that research be undertaken by the Medical Research Council but that in order to help if it was decided to make an application for funds a body of experts should visit East Africa. The report was examined by the Tropical Medical Research Committee of the Medical Research Council and by the Colonial Advisory Medical Committee who advise me that they doubt whether any useful purpose would be served by such a visit and that further assistance could best be rendered by the visit of individual experts to study special problems as they arise. I regret that at the present time there are no funds available from which such a scheme of further research could be financed and I observe from the Report of the Conference that the minimum sum required for their scheme was stated to be at least £30,000 or £40,000 a year.

Medical Certificates and School Meals

Mr MORGAN JONES asked the President of the Board of Education whether he would make arrangements whereby local education authorities could delegate to headmasters and headmistresses of schools authority to give meals to necessitous children without waiting for a certificate from the medical officer of the authority.—Mr GEOFFREY SHAKESPEARE, Parliamentary Secretary to the Board of Education, replied: I am sending the hon Member a copy of the Board's Circular 1443 from which he will see that there is no requirement that a certificate should be given by the school medical officer before children may receive free meals. It is for the local education authority to decide whether children should be fed and in paragraphs 4 and 5 of the Circular they are urged to invite reports from school medical officers, teachers and others in regular contact with the children from day to day and to make interim arrangements pending full investigation for the immediate feeding of children recommended for meals.

THURSDAY MARCH 25TH

Spirochætal Jaundice Order

Mr WIDSON asked the Home Secretary whether he was now prepared to make the necessary order for the scheduling of spirochætal jaundice as an industrial disease, as recommended by the Home Office Committee.—Captain MARSHALL, Parliamentary Secretary to the Treasury, replied: The drafting of this order has been found to raise some points of difficulty which are being gone into but my right hon friend hopes that the matter will be settled at an early date.

Drunkenness in Armament Areas

Sir ROBERT YOUNG asked the Home Secretary whether in view of the increased drinking and drunkenness in some towns concerned in the new measures for national defence and in particular in Warwickshire where a chief constable had drawn attention to the considerable increase of drunkenness and disorderliness since the drinking hours were lengthened he would call for an inquiry into the influence of the various kinds of extended drinking facilities upon public order and industrial efficiency, especially in the armament manufacturing areas.—Captain MARSHALL replied: The grant of extended drinking hours lies generally speaking in the discretion of the local justices who can be trusted to take due account of all relevant circumstances in their locality. My right hon friend does not think that there is any ground for the institution of such an inquiry as is suggested by the hon Member.

Infectious Diseases Hospital for Retford and Workop

Mr BELLINGHAM asked the Minister of Health whether he had yet approved a scheme for the provision of an infectious diseases hospital for the urban and rural districts of Retford and Workop.—Sir KINGSLEY WOOD replied: The scheme of the Nottinghamshire County Council for the provision of adequate hospital accommodation for the treatment of infectious diseases in that county was

approved by me on Oct 10th, 1935 I have since received from the local authorities concerned applications for provisional orders for the establishment of joint hospital boards for that part of the county in which the districts to which the hon Member refers are situated These applications are under consideration

Appointments under Midwives Act, 1936

Mr VIANI asked the Minister of Health if, when issuing regulations in connexion with the Midwives Act, he instructed the medical officers of health when making appointments to confine such appointments to those who possessed a certificate in midwifery and also the certificate of a State registered nurse—Sir KINGSLEY WOOD replied The Midwives Act, 1936 does not empower me to issue regulations with regard to the qualifications of midwives to be appointed under the Act In the circular which I addressed to local supervising authorities on Sept 18th last I drew attention to the importance of absorbing into the new service as many as possible of the independent midwives, at present in practice, and the circular made no suggestion that appointments should be confined to midwives who are State registered nurses I should deprecate any such limitation in the case of the appointments first made by local supervising authorities under the Act

Prepared Fruit Juice

Mr DE LA BERE asked the Minister of Health whether he was aware that cases existed of manufacturers who made synthetic or semi synthetic products labelled as genuine fruit juice, or prepared fruit juice, which contained no foundation of real fruit, and whether he would take steps to prevent such misdescription—Sir KINGSLEY WOOD replied On the facts as stated it would appear that the matter can be dealt with by the responsible local authorities under the Food and Drugs (Adulteration) Act, 1928 and I do not think therefore, that any special action on my part is necessary

Indictable Offences

Mr SHORT asked the Home Secretary the number of persons found guilty of indictable offences during 1935 and 1936, respectively, the number of juvenile offenders, and how the latter were dealt with—Sir JOHN SIMON

replied The number of persons found guilty in 1935 of indictable offences was 69,849 Of these offenders 25,643 were under the age of 17 Of the offenders under the age of 17, 9 per cent were sent to Home Office Schools 51 per cent were placed under the supervision of a Probation Officer, 8 per cent were bound over without an order for supervision, and 24 per cent were dismissed Figures for 1936 are not yet available

Health Insurance and Medical Treatment

Sir ROBERT GOWER asked the Minister of Health if, taking the figures for the last five years, he could state the average number of insured persons who had never used the services of their panel doctor—Sir KINGSLEY WOOD replied In each of the five years 1932 to 1936 the number of insured persons in England and Wales who, although entitled to medical benefit had not chosen an insurance doctor was on the average about 495,000 I cannot give a similar figure of the number of persons who have chosen a doctor but have not used his services

Clinics for Mental and Nervous Diseases

Mr RHYS DAVIES asked the Minister of Health how many clinics were operating, under the control of his department or the Board of Control, for persons suffering from incipient mental or nervous diseases, together with their location and availability—Sir KINGSLEY WOOD replied I am having this information compiled and will send it to the hon Member as soon as possible

Ministry of Labour versus a Manchester Hospital

Mr ELLIS SMITH asked the Minister of Labour whether he had considered the report by the Manchester Royal Infirmary Medical Board on the building which the Ministry of Labour intended to erect adjoining the central branch of the Manchester Royal Infirmary, and what action he proposed to take—Mr E BROWN replied I would refer the hon Member to the reply given on this subject on March 8th—Mr SMITH Has the Minister considered the very serious report prepared by the medical board, and, if he has, will he give his personal attention to this matter in order that satisfactory arrangements can be made between the two parties?—Mr BROWN I am giving my personal attention to this matter

PUBLIC HEALTH

A Five-Year M and C W Scheme for London

ON April 1st comes into operation the scheme by which the L C C and the councils of the metropolitan boroughs make a fixed contribution for the next five years to the voluntary associations providing M and C W services in the county of London The four largest annual contributions are these North Islington infant welfare centre, £4310, Royal College of St Katharine infant welfare centres, £3860, Violet Melchett infant welfare centre, day nursery and mothercraft training home, £3535, Salvation Army mothers' hospital, £3034. The conditions attached to the grants are that the council shall be satisfied of the efficiency of the services provided and that a reasonable number of the persons are using them, that no reduction or alteration of the services shall be made without the consent of the council, that the premises are open to inspection at all reasonable times and that a copy of the annual report with a statement of accounts and auditor's certificate shall be sent each year to the council On the other hand the council may not terminate or reduce the annual contribution without the consent of the Minister of Health, and any dispute or difference between the council and a voluntary association must be referred to the Minister whose decision shall be final

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK END—
MARCH 20TH, 1937

Notifications—The following cases of infective disease were notified during the week Smallpox, 1 (Derby), scarlet fever, 1791, diphtheria, 1068, enteric fever, 24, pneumonia (primary or influenzal), 1288, puerperal fever, 37, puerperal pyrexia, 115, cerebro spinal fever, 25, acute poliomyelitis, 3, acute polio-encephalitis, 1, encephalitis lethargica, 8, dysentery, 20, ophthalmic neonatorum, 90 No case of cholera, plague, typhus fever was notified during the week

The number of cases in the Infectious Hospitals of the London County Council on March 26th was 3305 which included: Scarlet fever 862, diphtheria 1041, measles 26, whooping-cough 568, puerperal fever 18 mothers (plus 10 babies), encephalitis lethargica 232, poliomyelitis 1 At Margaret's Hospital there were 15 babies (plus 6 mothers) with ophthalmic neonatorum

Deaths—In 122 great towns, including London, there was no death from small-pox or enteric fever, 10 (1) from measles, 1 (0) from scarlet fever, 21 (1) from whooping-cough, 30 (4) from diphtheria, 45 (1) from diarrhoea and enteritis under two years, 171 (21) from influenza The figures in parentheses are those for London itself

Birmingham reported 6 deaths from measles Hull 2, 1 case of whooping-cough were scattered over 15 great towns Liverpool and Middlesbrough had each 3 Fatal diphtheria was reported from 26 great towns Liverpool and Birmingham each 3 Deaths from influenza have slightly increased Birmingham reported 10 Leeds 7 Sunderland and Cardiff each 1 The number of stillbirths notified during the week was 281 (corresponding to a rate of 41 per 1000 total births), including 51 in London

OBITUARY

JOHN DAVID MALCOLM M.B. F.R.C.S. Edin.

The death occurred on Saturday March 20th, suddenly at Sheet House Petersfield, of Mr John David Malcolm in his day a well known obstetric surgeon. The son of Dr John Malcolm of Edinburgh he received his medical training at the University of Edinburgh and Guy's Hospital and graduated as M.B. Ch.B. Edin. in 1881 taking later the diploma of F.R.C.S. Edin. He held the resident appointments at the Royal Infirmary Edinburgh and then decided to practise as a specialist in London. He made a considerable mark with careful reports of clinical work contributed to the *Transactions* of the Medical and Chirurgical Society the Medical Society of London and our own columns. He was elected to the staff of the Samaritan Free Hospital, was president of the obstetric and gynaecological section of the Royal Society of Medicine was awarded the Liston Victoria Jubilee prize of the R.C.S. Edin. and gained a high position in his specialty as a careful and successful operator. He had retired from the medical profession for a considerable time and was approaching his eightieth birthday at the time of his death.

Dr Cuthbert Lockyer sends us the following appreciation. With the death of John Malcolm there now remain only two of the eleven men who made up the staff of the Samaritan Hospital at the end of the last century. In 1898 which dates my own connexion with that institution the staff was composed of five physicians and six surgeons. The physicians were Drs. Boulton Routh McCann Roberts, and Tate. The surgeons were Messrs Merodith Doran Malcolm, Butler-Smythe, Targett and Corrie. Keep and the distinction which then existed between physician and surgeon was one of vested interests. The activities of the former were confined to vaginal surgery whilst to the latter came all the laparotomies. The anomaly of this arrangement was emphasised by the fact that the academic surgical qualifications of the physicians (as exemplified by possession of the F.R.C.S. Eng.) were higher than those of the surgeons. A certain struggle for equality was animated and Mr Malcolm as one of the privileged surgeons, finally acquiesced in the removal of an anachronism. When the late Mr H. Targett retired in June 1899 I took his place and thus became assistant to Mr Malcolm. This meant helping at all his operations at first in hospital and only later in private as well. This relationship continued for a few years only. It lasted long enough however and was sufficiently intimate for me to appreciate the value of a training which in its austerity was obsolete at the present day but which none the less, I should have been sorry to miss. Those were the days when the principle of total isolation for abdominal cases was insisted on and accordingly laparotomy was only carried out in small rooms containing one, or at most two beds each. There was no resident officer and the assistants duties embraced the functions of house surgeon and porter combined whilst the nurse in immediate charge in operation-cases would remain on duty continuously for more than 48 hours. In 1896 Mr Malcolm was granted seven surgical beds and if I recollect rightly these were distributed among half a dozen small rooms. In 1905 the number of his beds was increased to eight.

Malcolm had inherited many of the attributes of

his predecessor and master Knowsley Thornton including a certain brusqueness of demeanour which whilst alarming at first was found later to be only a surface-display and became far less evident as time went by. Looking back after a lapse of more than a quarter of a century one recalls Malcolm as a colleague who merited respect for his outspokenness and his honesty of purpose for his indomitable energy and perseverance for his loyalty to and willingness to help a colleague, and even for his pertinacity in opposition. It would be safe to say that he had no enemies among his hospital colleagues and this may be explained because we always knew what was to be expected of him. At the Samaritan the governing body induced him to continue his services beyond the age limit of 60 years and it was universally felt that the reputation of the institution was enhanced by his services. His death will be accounted a severe loss not only by his old colleagues who survive him but by all those with whom he came in contact at the Samaritan and at the Royal Society of Medicine.

JOHN ARNOLD JONES O.B.E. M.B. Vict., F.R.C.S. Edin.

We regret to announce the death of Dr Arnold Jones at the age of 57 which occurred suddenly on March 23rd. He had been in poor health for some time past following a severe illness last winter, but recently had seemed much better and his sudden death came as a great shock to his relatives and many friends.

Arnold Jones was a Manchester student and obtained the degrees of M.B. Ch.B. in 1903. After a post as house surgeon to the Manchester Royal Infirmary he successively held residential posts at the Royal Ear Hospital London and the Birmingham and Midland Ear and Throat Hospital. By this time he was well on the way to taking up his specialty and supplemented his education in that branch of surgery by a period of study in the Viennese clinics. He held the posts of honorary surgeon to the St. John's Hospital for Diseases of the Ear and Throat honorary assistant to the Royal Manchester Children's Hospital and to the St. Mary's Hospitals. From his early student days Jimmy Jones was recognised as a fluent speaker and a keen debater and many an otherwise dull evening has been enlivened by his shafts of wit and repartee. He was a man of very strong opinions which he never hesitated to express and if his views sometimes aroused opposition they invariably attracted attention and were a fruitful source of discussion. In his own branch of surgery he soon became an authority both as a clinician and an operator and his contributions to his subject were always listened to or read with attention. During the war he served with the 26th General Hospital in Salonika where he was appointed consulting aural surgeon and laryngologist to the British Expeditionary Force. He was awarded the O.B.E. for his services and retired with the rank of major.

No man had a wider circle of friends made in his youth and retained with increasing affection as the years passed by. Ready for any fun which might be afoot in his younger days Jones was the life and soul of the party. Always an omnivorous reader he leaned upon this as a recreation more and more as time passed but to the end nothing gave him greater joy than a reunion with his old friends. His death is a personal loss to his many friends all of whom

will unite in offering their sympathy to his widow and two children

"C P L" and "H T A" write "Arnold Jones, or 'Jimmy,' as he was affectionately known to his colleagues, during his long period of service at the Royal Manchester Children's Hospital, was punctilious in the performance of his duties, and very successful in dealing with children. His mastoid operations were particularly successful. He paid special attention to the after care of his patients, and never spared himself in their service. As a mark of the appreciation of his services he was elected a member of the board of governors. He was a man of strong opinions, fearless in his support of them, and a loyal friend who will be much missed by his patients, both private and hospital, and by his colleagues, many of whose children had been under his care."

MABEL PAINE, M B Lond

We have received the following graceful and pathetic tribute from Prof Harold Balme to Dr Mabel Paine, who died in a Surrey nursing home on Easter Monday

"Born in Maidstone in 1874, Mabel Paine joined the London School of Medicine in 1892. She graduated at London University in 1900, held resident posts at the Elizabeth Garrett Anderson Hospital and Chelsea Infirmary, and then took up general practice in Kensington. During this period she became interested in infant welfare work, and also became clinical assistant at two of the chief hospitals for diseases of the chest. In 1917 she commenced consulting practice and was appointed assistant physician to the Elizabeth Garrett Anderson Hospital. Four years later she was made a full physician, but in 1927, when at the height of her work, her health gave way, and after struggling on heroically for some months she was at length compelled to give up her practice and resign her appointments.

"During the severe illness which followed the nobility and beauty of her character fully revealed themselves. For over eight years she lay an invalid, battling against an insidious renal infection which racked her strength with recurrent attacks of pyrexia and pain and defied every resource of medical and surgical science. Throughout this wearisome time her courage, patience, and keen scientific interest in every new form of therapy endeared her to nurses and doctors alike, whilst her richly stored mind made her companionship a source of constant profit and delight. Old patients from all parts of the country came to visit her, each testifying to the depth of affection they bore her and the debt they owed to her personality and skill. 'The humblest woman God ever made' was the description given of her by one of her patients, whilst a former colleague recently spoke of her as 'the gentlest of spirits and soundest of opinions.' Her life and her influence will ever be fragrant memories to all of us who had the privilege of her friendship"—H B

HERBERT ANDREW, M B Edin

Dr A H T Andrew, who died at Holbrook, Suffolk, on March 22nd in his 54th year, was born at Northampton, educated at Bedford Modern School and St Edward's School Oxford and pursued his medical studies at Edinburgh University where he graduated in 1910. Although a good footballer, holding a regular place in the University Rugby fifteen, he was even in his undergraduate days a

student of nature, spending much of his spare time in observing, photographing, and stuffing birds. He already loved his gun, rod, and artist's brush. After holding resident hospital appointments in Edinburgh, Dublin, and Northampton, he settled in practice at Leiston Suffolk, where he remained for fifteen years. He held a commission in the Territorial Army and on the outbreak of war in 1914 was attached to the 1st East Anglian field ambulance and served through the Gallipoli campaign in the famous 29th division. He was transferred with that division to France, where he belonged to the 88th Field Ambulance and was also for a time attached to the 1st Royal Inniskilling Fusiliers. In 1917-18 he worked in the casualty clearing zone, first as an anaesthetist, but finally realising his laudable ambition of being appointed a surgeon, in that capacity he worked in the 53rd Clearing Hospital till the armistice. In 1927 he relinquished his practice at Leiston, but remaining faithful to the county of his adoption transferred to Holbrook, where in addition to his ordinary work he became medical officer to the Royal Hospital Naval School, an appointment which he held till his death.

A war time friend and comrade writes "Two years of almost constant association with Andrew as a tent fellow cemented a friendship that death alone can destroy, and although mileage precluded frequent meetings in the years of peace, I retain a vivid memory of a debonair officer, no matter how depleted of sleep and rest, indefatigable, self sacrificing, and the best companion in a surgical team that any surgeon could desire. His affability and charm enhanced our popularity as a visiting team to other clearing stations in times of battle. His fortitude was shown in his final illness. At a graveside last week the huge concourse would have surprised one who was himself so modest, it was a tribute to the matchless worth of the general practitioner. The corner of Suffolk between Stow and Orwell has been robbed by death of a devoted doctor and a great gentleman."

Dr Andrew married Ethel Rosamond Candy and leaves a widow and six children

JOHN ATTLEE, M D Camb

Dr John Attlee, who died on March 8th Wellingborough, was the son of the late John Attlee of Dorking. He was educated at Amersham School and St John's College, Cambridge, and graduated with honours in the Natural Sciences Tripos in 1888, proceeding for his medical training to St Bartholomew's Hospital with the Shuter scholarship. He graduated as M B, B Chir Camb in 1892 and did useful research work under the late Prof Kanthack. He had clinical appointments at his hospital, at Hospital for Consumption, Margaret street, and at Royal Westminster Ophthalmic Hospital, and from the outbreak of war until 1919 he held the post of ophthalmic surgeon to the Victoria Hospital for Sick Children. Dr Attlee practised in the Grosvenor square district for more than forty years before his retirement last October and his personal qualifications no less than his professional skill contributed to his all round success. He made certain contributions to medical literature of a practical nature and was always deeply interested in development either in theory or treatment.

Dr Attlee was 67 years old at the time of his death and is survived by a son and a daughter.

MEDICAL NEWS

University of Cambridge

Dr S. D. Elliott has been appointed university demonstrator in the department of pathology.

The following have been appointed examiners for the diploma in medical radiology and electrology: Mr Q. Stead and Mr B. L. Wormop Ph.D. (Part I). Dr F. Roberts Dr Russell Reynolds and Dr E. P. Cumberbatch (Part II).

University of London

At a recent examination the following candidates were successful:—

D.M.B.

Part I.—I. A. Abou Sima, Pranasanthi Arunachalam, C. B. Chatterjee, Phyllis M. Fraser, D. W. Smithers, and R. C. W. Stalor.

Applications for grants from the Thomas Smythe Hughes fund for assisting medical research are invited in our advertisement columns. They should reach the academic registrar of the university by May 15th.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery—O. L. Blacklock, Univ. of Camb. and Guy's Hosp.; K. G. Pascale and R. A. Stenhouse, Guy's Hosp.; H. G. Stitt, Westminster Hosp.; G. Theophilus, Univ. of Oxford and St. George's Hosp.; R. H. S. Thompson, Univ. of Oxford and Guy's Hosp.; T. Van Der Walt, London Hosp. and W. W. Wilson, Univ. of Oxford and St. Mary's Hosp.
Medicine—V. M. Attenborough, Roy. Free Hosp.; E. M. Attenborough, Roy. Free Hosp.
Midwifery—W. J. Bold, Westminster Hosp.; E. E. Bullock, Univ. of Leeds; E. S. Reed, Univ. of Camb. and St. Mary's Hosp.; J. J. C. Smith, London Hosp.; G. Theophilus, Univ. of Oxford and St. Mary's Hosp.; W. W. Wilson, Univ. of Oxford and St. Mary's Hosp. and W. G. Zerab, Guy's Hosp.

The following candidates, having completed the final examination, are granted the diploma of the society, entitling them to practise medicine, surgery, and midwifery: C. L. Blacklock, R. G. Stitt, G. Theophilus, and W. W. Wilson.

University of Leeds

At recent examinations the following candidates were successful:—

M.D.

L. Glick, E. H. Kitching, L. Nagley, A. B. Raper, and J. F. Warrin.

FYNAL EXAMINATION FOR M.D. CH.D.

Part I.—J. A. Braham, T. E. Broadbent, D. Brook, W. L. Carruthers, J. Cross, J. K. Drucquer, D. B. Feather, Dorothy Hain, E. Hyman, E. W. Jackson, W. R. Jackson, R. A. Keighley, E. S. Levy, S. Madden, Kathleen V. Miller, R. Orton, J. Oulton, G. J. Field, J. E. Robinson, J. W. Scholey, S. H. Sordman, M. St. George, I. B. Stewart, A. W. Taylor, A. P. B. Walnd, A. J. Ward, T. I. Watkins, D. O. Williams, Kathleen Wilson, and K. B. Wood.
 Part II.—K. B. Anko, A. A. Driver, R. W. Ellis, V. P. George, I. R. Gray, G. A. Green, G. W. V. Greig, T. Hardy, Gwyneth M. Hosking, K. H. Husain, S. Laak, R. Lawrence, A. Livingston, Agnes M. Mitchell, P. P. Raper, J. A. Rhind, A. H. Rhodes, Joyce M. Rhodes, I. D. Riley, C. H. Robinson, G. B. Robinson, H. S. Sordman, J. C. T. Sykes, D. Taverner, G. Thelwell, L. G. Toham, Mary Townsend, Lella M. Walman, J. W. Walker, and F. J. D. Webster.
 Part III.—J. A. Rhind (first-class honours), A. A. Driver (first-class honours), R. W. Ellis (first-class honours), I. R. Gray, G. W. V. Greig, I. D. Riley, and D. Taverner (second-class honours), Rosemary Blackwood, R. W. Ellis, T. Hardy, Gwyneth M. Hosking, K. H. Husain, S. Laak, R. Lawrence, N. Livingston, Agnes M. Mitchell, P. P. Raper, A. H. Rhodes, Joyce M. Rhodes, C. H. Robinson, G. B. Robinson, I. D. Riley, C. T. Sykes, L. G. Toham, Lella M. Walman, W. Walker, and F. J. D. Webster.

FYNAL EXAMINATION FOR D.C.H.D.

K. M. Newbould (second-class honours).

FYNAL EXAMINATION FOR L.D.S.

P. R. Davidson, R. M. Dent, A. D. Halliwell, H. H. Hammond, P. H. Popen, E. H. Sanderson, A. Stannard, J. O. Sykes, and Walmsright.

D.P.H.

A. D. B. Broughton.

British College of Obstetricians and Gynaecologists

The following candidates have satisfied the examiners and have been awarded the diploma of the College:—

Mr R. Anderson, W. G. Baker, R. G. Barton, Jane O'Brien, S. Dawne, W. General, R. E. Henson, C. W. C. Jarran, May, R. J. L. Miller, G. J. Min, F. M. Newham, C. C. Newham, Margaret F. Robertson, Sophie Schiller, and Phyllis Dorothy M. Stewart and Clifford Tellow.

Royal College of Physicians of London

An additional Prophit scholar will shortly be appointed to cooperate with the present scholar in the conduct of a survey into the incidence and progress of tuberculosis in selected sections of the community. Special experience in tuberculosis is not essential. Applications should be sent to the assistant registrar of the College, Pall Mall East, London S.W.1 before April 26th. Further particulars will be found in our advertisement columns.

King's College Hospital

Sir Walter Langdon Brown will address the Listerian Society at this hospital on Wednesday April 7th at 8.15 p.m. He will speak on the integration of the endocrine system. Medical students and practitioners are invited to attend.

Radiological Congresses

The twenty-eighth congress of the Deutschen Röntgen Gesellschaft will be held at Breslau from April 12th to 14th. Further information may be had from Prof. Erik Brückner, 22, Berlin, N.W. 87. It is also announced that the International Radiological Congress will be held in Chicago from Sept. 13th to 17th.

Institute of Medical Psychology

On April 20th, 21st, and 22nd Prof. E. Kretschmer of Marburg will lecture at the institute, Malet-place, London W.C. at 8.30 p.m. He will speak on heredity and constitution in the etiology of psychic disorders on the structure of the personality in relation to psychotherapy and on instinct and hysteria. The lectures are open only to medical graduates and tickets may be obtained in advance from the educational secretary of the institute.

Royal Navy Medical Club

The twenty-third annual dinner of this club will be held at the Trocadero Restaurant, London W. on Friday April 16th, at 8 p.m. The general meeting will take place before the dinner at 7.30 p.m. Information can be had from the hon. secretary, Surgeon-Commander M. B. Macleod R.N., Medical Department, Admiralty, London S.W.1.

Demonstrations of Contraceptive Technique

On Wednesday April 7th at the C.B.C. clinic at 3.30 p.m., a practical demonstration of the technique of the use of a variety of contraceptive methods will be given by Mrs. Marie Stopes D.Sc. and Dr. Evelyn Fisher. Tickets may be obtained in advance from the hon. secretary, 108 Whitfield-street, London W.1.

Dickinson Scholarship Trust

This trust which is administered by representatives of the Manchester Royal Infirmary and the University of Manchester awards an annual scholarship in anatomy of £25 an annual travelling scholarship in medicine of £300 and in alternate years a scholarship in pathology and surgery of £75. The scholarships are open to graduates of any university who have received the three last years of their medical training at Manchester. The increased present-day costs of living and travelling have made it necessary to supplement the travelling scholarship and the trustees are appealing for additions to the endowment. The fund may be addressed at the Royal Infirmary, Manchester.

Vitaminised Margarine

At a meeting of the food group of the Society of Chemical Industry on March 10th in London Mr P. N. Williams speaking on the food value of margarine said that during the last fifty years it has been shown that both margarine and the fats used in making it are almost completely used by the body. It is nearly twenty years Mr Williams continued since Halliburton and Drummond drew attention to the almost complete absence from margarine of certain vitamins normally present in good butter. Vitaminised margarine was placed on the market for the first time ten years ago. To-day the great bulk of margarine—in Great Britain at least—is a completely vitaminised in respect of vitamins A and D.

Battersea General Hospital

At a recent meeting of the board of management Sir Harold Bellman, managing director of the Abbey Road Building Society, was elected chairman of the hospital, and the names of Mr G J Sophian, F.R.C.S., and Dr John Speares were added to the membership of the board

St George's Hospital

A donation of £8000 has been received by this hospital from the executors of the late Mr Caleb Diplock of Eastbourne. The gift is to be devoted to providing and equipping two operating theatres in the new hospital.

The hay fever clinic which was inaugurated last year has reopened. Patients will be seen each week day, and the medical staff numbers 10, but as 500 applications for treatment have already been received no more can be considered at present.

World Congress on Mental Hygiene

The second world congress on mental hygiene will take place in Paris from July 19th to 23rd under the auspices of the French League for Mental Hygiene. Scientific sessions will be held in the morning and afternoon, and a number of visits to mental institutions and clinics are being organised. Attendance at the congress is open to all interested in mental hygiene. Copies of the preliminary programme and all particulars may be had from the secretary of the National Council for Mental Hygiene, 76, Chandos House, Palmer street, London, S.W.1.

International Short Wave Congress

The first International Short Wave Congress will be held in Vienna from July 12th to 17th under the presidency of Prof A d'Arsonval, Marchese Marconi, and Prof J Zenneck. There will be an exhibition of the newest inventions and their practical application. The official languages will be English, French, German, and Italian. The work of the congress will be divided into the following sections: physics, chemistry and physical chemistry, and technical physics, biology, and medicine. The secretariat of the congress may be addressed at the physical medicine department of the Allgemeines Krankenhaus, Alserstr 4 Vienna, IX.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES**ROYAL SOCIETY OF MEDICINE**, 1, Wimpole street W 1

TUESDAY April 6th

Orthopaedics 5.30 P.M. (Cases at 4.30 P.M.) Mr C Lamberton 1. Genu Recurvatum Mr N L Capener 2. Intractable Sciatica, due to Prolapsed Intervertebral Disk Mr E J Smith (for Mr St J D Buxton) 3. Cystic Disease of the Radius Mr J P Hosford 4. Arthrogram to Show Extent of Synovial Cavity after Synovectomy Dr H S Taylor Young (introduced by Mr G R Girdlestone) 5. Unusual Defect of the Shoulder Mr L W Plowes (introduced by Mr Girdlestone) 6. Gross Patchy Rarefaction of the End of the Long Bone in a Case of Tuberculosis of the Hip Mr K H Priddle Treatment of Fractures of the Neck of the Femur (with film)

WEDNESDAY

History of Medicine 5 P.M. Dr P H Manson Bahr Historical Landmarks in Tropical Medicine
Surgery 8.30 P.M. (Specimens on view from 5 P.M.) Mr W Sampson Handley 1. Melanotic Sarcoma of Face Removed by Monoblock Section Mr R Davies Colley 2. Chondroma of Thyroid Cartilage 3. Enlarged Spleen of Doubtful Nature Mr John Hosford 4. Lipodermatoma at the Umbilicus 5. Cholecystitis (calculous) Proliferans Mr Reginald T Payne 6. Acute Parotitis 7. Adenolymphoma of Parotid 8. Calcification of Parotids

FRIDAY

Clinical 5.30 P.M. (Cases at 4.30 P.M.) Annual general meeting Dr Nell Hobbouse 1. Diffuse Sclerosis Mr A Dickson Wright 2. Solitary Plasma-celled Myeloma of the Vertebral Body Causing Paraplegia Dr H Parker Weber and Dr A Schlüter 3. Felty's Syndrome Mr D C L Fitzwilliams 4. Series of Cases of Carcinoma of the Breast Treated by Partial Amputation
Epidemiology and State Medicine 8.15 P.M. Prof Claus Jensen (Copenhagen) Active Immunisation against Diphtheria by the Combined Subcutaneous and Intranasal Method

WEST LONDON MEDICO-CHIRURGICAL SOCIETY

FRIDAY, April 9th—8.30 P.M. (De Vere Hotel Kensington) Dr Edwin Smith Dr B T Parsons Smith and Dr T Skene Keith Sudden Death

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

THURSDAY, April 8th—8.30 P.M. (11, Chandos street W.1) Dr H Orlinton Miller Puberty and Adolescence (Symposium on Mental Health in Childhood and Adolescence IV)

WEST KENT MEDICO-CHIRURGICAL SOCIETY

FRIDAY, April 9th—8.45 P.M. (Miller General Hospital, S.E.) Dr Jane Hawthorne Dr Margaret Green, Dr Janet Gray and Dr F A Beattie That Contribution is to the Advantage of Humanity

LONDON JEWISH HOSPITAL MEDICAL SOCIETY, Stepney Green E

THURSDAY April 8th—4 P.M. Prof Samson Wright Social Organisation in the Living Body

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.**BRITISH POSTGRADUATE MEDICAL SCHOOL** Ducane road W

MONDAY April 5th—2.30 P.M. Dr C W Buckley Arthritis

WEDNESDAY—Noon clinical and pathological conference (medical) 2.30 P.M. Mr E J King, Ph.D. Acidosis and Alkalosis 3.15 P.M. clinical and pathological conference (surgical) 4 P.M. Mr J E H Roberts Surgery of the Chest 4.30 P.M. Dr W E Gye Experimental Cancer Research

THURSDAY—Noon, clinical and pathological conference (obstetrics and gynaecology) 2.30 P.M. Dr Duncan White Radiological Demonstration 3.30 P.M. Mr A K Henry Demonstrations on the Cadaver of Surgical Exposures 3.30 P.M. Mr Clifford White Benign Neoplasms of Uterus

FRIDAY—2 P.M. operative obstetrics 3 P.M. department of gynaecology pathological demonstration Daily 10 A.M. to 4 P.M. medical clinics surgical clinics and operations obstetrical and gynaecological clinics and operations

WEST LONDON HOSPITAL POST GRADUATE COLLEGE Hammersmith W

MONDAY, April 5th—10 A.M. Dr Post Demonstration of X Ray Films skin clinic 11 A.M. surgical wards 2 P.M. operations surgical and gynaecological wards medical surgical and gynaecological clinics 4.15 P.M. Mr Green Armytage Alarums

TUESDAY—10 A.M. medical wards 11 A.M. surgical wards 2 P.M. operations medical surgical, and throat clinics

WEDNESDAY—10 A.M. children's ward and clinic 11 A.M. medical wards 2 P.M. gynaecological operations medical surgical and eye clinics 4.15 P.M. Mr Gibb Demonstration of Eye Cases

THURSDAY—10 A.M. neurological and gynaecological clinics Noon fracture clinic 2 P.M. operations medical surgical, and genito urinary and eye clinics 4.15 P.M. Dr W S O Copeman Respiratory Disorders

FRIDAY—10 A.M. medical wards skin clinic Noon lecture on treatment 2 P.M. operations medical surgical and throat clinics 4.15 P.M. Mr S Smith Blood per Rectum

SATURDAY—10 A.M. children's and surgical clinic 11 A.M. medical wards

The lectures at 4.15 P.M. are open to all medical practitioners without fee

NATIONAL HOSPITAL FOR DISEASES OF THE HEAR Westmoreland street W

TUESDAY April 6th—3.30 P.M. Dr Maurice Campbell Paroxysmal Tachycardia

CENTRAL LONDON THROAT NOSE AND EAR HOSPITAL Gray's Inn road W.C.

FRIDAY April 9th—4 P.M. Mr A Lowndes Yates Family Sinusitis

ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE 42, Ranelagh road S.W.

FRIDAY April 9th—4.30 P.M. Dr G T Calthrop Demonstration of X Rays of Conditions Simulating the Pathologic Diseases

MANCHESTER ROYAL INFIRMARY

TUESDAY April 6th—4.15 P.M. Mr Wilson H H Diagnosis

FRIDAY—4.15 P.M. Dr Charles Don Demonstration of Medical Cases

GLASGOW POST GRADUATE MEDICAL ASSOCIATION

WEDNESDAY April 7th—4.15 P.M. (Royal Infirmary) Dr David Smith Hematemesis

Appointments

COOKSON, J. S., M.B. Camb, Assistant County Medical Officer for Holland Lines

JAMESON, S. R., M.B. Glasg. Resident Medical Officer Heathfield Infectious Diseases Hospital Ayr

MATHESON, BENJAMIN, M.B. Edin D.P.M. Second Assistant Medical Officer at Leytonstone House (L.C.C.)

STRADMAN, H. A., M.B. Lond D.P.M., First Assistant Medical Officer at Long Grove Hospital (L.C.C.)

Certifying Surgeon under the Factory and Workshop Act Dr J. W. STRACHAN (Dornoch District Sutherland)

Vacancies

For further information refer to the advertisement columns

Accrington Victoria Hosp.—H.S. £150

Bath Royal Infirmary.—Hon. Asst. Gynaecologist and Obstetrician. H.S. to Ear Nose and Throat Dept. at rate of £150. Also H.P. at rate of £150

Bedford County Hosp.—First and Second H.S.s at rate of £155 and £160 respectively

Belgrave Children's Hosp.—Children 1 Clapham-road, S.W.—Two H.P.s and two H.S.s, each at rate of £100

Birmingham.—M.O. for Maternity and Child Welfare Dept., £200

Birmingham and Midland Eye Hosp.—Hon. Surg. O., £200

Birmingham Colehill Hall.—Res. Asst. M.O. £250

Birmingham Royal Infirmary.—Res. Asst. £175

Bournemouth Royal National Sanatorium.—Med. Supt. £800

Also Res. Asst. M.O., £200

Brighton Royal Alexandra Hosp. for Sick Children.—H.S. £120

Bristol Royal Sussex County Hosp.—Hon. Clin. Asst. to Early Nervous Diseases Dept.

Bristol Royal Infirmary.—Clin. Anaesthetist to Dental Dept. £150

British Postgraduate Medical School Duane-road W.—H.S. at rate of £105

Burton-on-Trent General Infirmary.—H.S. £150

Cambridge Addenbrooke's Hosp.—Res. Anaesthetist and Emergency Officer at rate of £130. Also H.P. and H.S. to Special Depts., each at rate of £130.

Cheltenham General and Eye Hospitals.—H.S. to Eye Ear Nose and Throat Dept. £150

Chesham Burghley Sanatorium and Settlement (Great Barrow).—H.P. at rate of £150

Chichester Royal West Sussex Hosp.—Jun. H.S. £125

Chichester Royal Eastern Counties Institution, &c.—Asst. M.O. £100

Connaught Hosp. Watlington Ave.—Med. Reg. Also Cas. O. at rate of £175 and £100 respectively

Dorchester Dorset County Hosp.—H.S., at rate of £150

Dudley Guest Hosp.—Second H.S. £120

Durham County Council.—Asst. School M.O. £200

East India Hospital, Singapore.—Gen. Res. M.O. £3.00

Kretling Hosp. for Sick Children, Southsea S.E.—H.S. at rate of £120

Glasgow Royal Faculty of Physicians and Surgeons.—Fellowship in Clinical Medicine

Guilford Royal Surrey County Hosp.—Asst. Pathologist, £200

Guy's Hosp. S.E.—Clin. Asst. for Radiology Dept., at rate of £150

Hampstead General and A. N. London Hosp. Harcourt Hill, N.W.—H.S. at rate of £105

Harrogate Children's Laboratory.—Clinical Pathologist £450

Harrogate, Royal Bath Hosp.—Res. M.O., £150

Hosp. for Sick Children Great Ormond-street W.C.—Out patient Med. Reg. £175

Hull Royal Infirmary.—Second H.S. at rate of £150

Leeds General Infirmary.—Res. M.O. for Maternity, £250

King's College Hosp. Denmark Hill S.E.—Sen. and Jun. Asst. Radiologists

Lancashire County Council.—Consultant Obstetrician, £1000

Leeds Public Dispensary and Hosp.—Cas. O. and H.S. £10

H.P. each at rate of £160

Leeds University School of Medicine.—Demonstratorship in Department of Physiology

Leicester City General Hosp.—Res. M.O. at rate of £200

Leigh Infirmary, Lancs.—Jun. H.S. at rate of £150

Lincoln County Hosp.—Jun. H.S. at rate of £150

Lipkoot, Hants. King George's Sanatorium for Sailors.—Asst. M.O., at rate of £200

Liverpool Royal Children's Hosp.—Res. H.S. for City Branch at rate of £100

Liverpool Royal Infirmary.—Registrar to Orthopaedic and Fracture Dept., £200

Liverpool Royal Southern Hosp.—H.S. to Orthopaedic Dept. at rate of £100

Liverpool Sanatorium Delamere Forest Frodsham.—Sen. Asst. to Med. Supt. £350

London and Counties Medical Protection Society Ltd Victory House Leicester-square, W.C.—Secretary, £150

London County Council.—Asst. M.O. A, Grade I, £350. Also Asst. M.O. A Grade II, £250

London Hosp. A.—First Asst. to Gynaecologist and Obstet. Dept., £250. Also First Asst. to Neuro-surgical Dept.

London County Council, St. Stephen Green, P.—Asst. Anaesthetist 11 guineas

London Lock Hosp. 223, Harrow-road W.—Res. M.O. to Male Depts., at rate of £175

Manchester General Infirmary.—Second H.S. at rate of £150

Manchester General Hosp.—Radiological Officer £200

Metropolitan Hosp. Kingsland-road E.—Sen. and Jun. H.P.s at rate of £100. Also Cas. O. and Res. Anaesthetist each at rate of £100

Midland Children's Royal Riding Infirmary.—Cas. O., at rate of £150

Newark General Hosp.—Res. H.S. £175

Newport Mon. Royal Gwent Hosp.—H.P. at rate of £150

Also two H.S.s, each at rate of £135

North Devon County Hosp.—H.S. at rate of £150

North Devon County Hosp.—Res. M.O. £150

Nottingham and Midland Infirmary.—Res. H.S. £200

Nottingham General Hosp.—H.S. to Spec. Depts., each at rate of £150

Orkney Island &c. Central Pacific.—Asst. M.O. £250

Othman Royal Infirmary.—H.S. Also H.S. to Spec. Depts. each at rate of £175

Oxford Hospitals.—Morris Orthopaedic Hosp. Headington.—H.S. at rate of £100

Paddington Green Children's Hosp. W.—H.P. and H.S. each at rate of £150

Pembury, Cassel Hosp. for Functional Nervous Disorders.—Two Locum Tenens each 8 guineas a week

Plymouth Prince of Wales's Hosp. Devonport.—Jun. H.S. at rate of £120

Portsmouth and Southern Counties Eye and Ear Hosp.—H.S., £160

Portsmouth Royal Hosp.—H.S. at rate of £130

Reading Royal Berkshire Hosp.—H.S., Cas. O. and H.S., to Spoo. Depts. each at rate of £150

Radcliffe Hosp.—Hon. Anaesthetist.

Royal Cancer Hosp. Fulham-road S.W.—Second Asst. Pathologist, £250

Royal Cancer Hosp. City-road E.C.—Med. Reg. £50

Royal College of Physicians Pall Mall East S.W.—Prophyl. Scholar £100

Royal College of Surgeons of England W.C.—Election of Professors and Lecturers

Royal Naval Medical Service.—M.O.s

Royal Victoria Hosp. for Children &c. Waterloo-road S.E.—Res. Cas. O. and H.P., at rate of £150 and £100 respectively

Salisbury General Infirmary.—Res. M.O., £250

St Albans and St. Marks Hosp., Church-crested.—Res. H.S. £150

St. Mary's-on-Sea Buckham Hosp.—Jun. H.S. £12.5

St. Mary's Hosp. for Women and Children Platonia E.—Res. H.S. and Res. H.P. at rate of £155 and £130 respectively

Scarborough New Hospital.—Two H.S.s, each at rate of £130

Sheffield General Hosp. for Women.—H.S. at rate of £100

Sheffield Royal Hosp. Post on Res. Med. Staff at rate of £20

Sheffield University Dept. of Bacteriology.—Asst. Bacteriologist and Demonstrator £500

Shrewsbury Royal Salop Infirmary.—Res. H.S. at rate of £100

Somerset County Council.—County M.O.H. and School M.O., £1500

Southampton Royal South Hants and Southampton Hosp.—Hon. Ophth. Surgeon

Stoke-on-Trent Burton Haywood and Tunstall War Memorial Hosp.—Res. H.P. at rate of £150

Sunderland Royal Infirmary.—Cas. O. £150

Sussex, East Hosp. Connaught Place Park-road.—Res. M.O. at rate of £200

Trafford Royal Cornwall Infirmary.—H.S. £170

Warrington General Hosp. Medical School, W.C.—Belt Memorial Fellowship for Medical Research £400

West Bromwich, Hallam Hosp.—H.P., at rate of £200

Western Ophthalmic Hosp. Margate-road W.—Jun. Res. H.S. £100

Wigan General Hosp. &c.—M.O.H. and School M.O., £200

Wickford Essex, Turner's Hosp.—Asst. Res. Physician £250

Wolverhampton Royal Hosp.—H.S. at rate of £100

Worthing Hosp.—Ophthalmic Surgeon.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Bamber (Wolverhampton), Bockingham (Bent) and Dorchester (Dorset). Applications before April 6th

Births, Marriages, and Deaths

BIRTHS

COWTIN.—On March 27th at Plymouth the wife of Dr W. H. Cowtin, Kingsbridge, of a son.

GALLOWAY.—On March 24th at a Nottingham nursing-home the wife of Dr V. P. R. Galloway M.B. of a daughter.

GRAHAM BIRCH.—On March 20th, at West Hildbury, Manchester the wife of Mr. Alexander Graham Bryce J.R.O.S. of a son.

HEDDERLEY.—On March 21st at Winchester the wife of Dr E. H. Valpy Hedderley of a daughter.

McDONNELL.—On March 8th at Gravesend, the wife of Dr O. McDonnell of a daughter.

O'CONNOR-CURRY.—On March 19th at Eastbourne the wife of Mr. Desmond O'Connor-Curphy F.R.C.S. of a daughter.

WALKER.—At Chowlands, Haindon Gate, Co. Durham on March 8th to Dr and Mrs. G. F. Walker—a son.

YOUNG.—On March 20th at Esher the wife of Dr Matthew Young of a son.

MARRIAGES

DAVIES.—ALLEN.—On March 25th at St. James's Paddington J. O. F. Davies, M.B. to Margaret P. Allen, of Toronto.

DRANE.—PETER.—On March 10th quietly, at St. Mary Bolton, London H. H. Drane Major-General M.B. ret., to Margery elder daughter of the late Mr. and Mrs. J. K. Pepper.

FLITCHER.—FRANKS.—On March 22nd in London. Ernest Fletcher M.D., to Mary Louise Franks of Heston Farm, Bellingham Kent.

KENDRICK.—LOXLEY.—On March 22nd, at the Church of the Holy Name, Esher, Captain G. W. Kendrick, R.A.M.C. to Patricia Andrea eldest daughter of the late Duke Hanolph Young O.B.E.

DEATHS

ANDREW.—On March 2nd, Alfred Herbert Trebman Andrew M.B. Edin.

BENNETT.—On March 9th at Watford, Frederick Joseph Bennett M.R.O.S. Fnc. L.D.S.

GRATEY.—On March 28th James Burnett Gratey M.R.C.S. Eng., of Hamstead Common road E. 8. aged 70.

McKENNAN.—On March 21st Mr. and Mrs. J. K. Pepper.

MICHERSON.—M.D. M.D. F.R.C.O. Emeritus Professor of Midwifery in the University of Aberdeen.

NASH.—On March 28th, at Hampton Hill, William Gunter Nash M.B. Edin., L.S.A., late of W. Yorks. Northants, aged 83.

STURROCK.—On March 27th, Evelyn Lanesborough Alexander Corbett Sturrock M.D. Edin., M.R.C.I. Lond. J.I.

WHITTINGTON.—On March 29th at Hove Rd. hant Whittington, M.D. Oxon.

V.D.—A fee of 1s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

ANCILLA'S REGISTER

THE Board of Registration of Medical Auxiliaries was set up last May, and the following representatives were appointed to its council: Mr H S Souttar, F.R.C.S., Dr G C Anderson, and Dr C B Heald (British Medical Association), Mr Vernon Cargill, F.R.C.S., and Group Captain H Cooper, M.R.C.S. (Society of Apothecaries of London), Mr R C Elmslie, F.R.C.S., Miss E W Bliss, and Miss E M Humble (Chartered Society of Massage and Medical Gymnastics), Mr H J Fde, Dr D D Malpas, and Mr F Melville (Society of Radiographers), Mr A W Ormond, F.R.C.S., and Mr E G Harwood (Association of Dispensing Opticians). The object of the board is to maintain a comprehensive register of those engaged in services ancillary to medicine. The first issue has now been published.¹ It consists of three sections—one giving the names of physiotherapists arranged topographically, and the second the names of dispensing opticians similarly arranged while the third is an alphabetical list of all the names which refers the reader to the appropriate local list. The board is not a qualifying body and at present recognises the examinations of the Chartered Society of Massage and Medical Gymnastics, the Society of Radiographers, the Association of Dispensing Opticians, and the examination for biophysical assistants of the Society of Apothecaries. But the claims of other bodies are being considered and the scope of the register may be widened to include them in the future. Those whose names are on the register have signed an undertaking not to do medical work except under the direction of a medical practitioner, and doctors are urged to make the fullest possible use of the register. A copy of it will be supplied on request free of charge to any registered medical practitioner.

A DOCTOR IN THE COUNTRY

IF the publishers of Dr Philip Gosse's pleasant digressions² from the theme of going for a walk—in the country—had consulted the calendar when they fixed on April 1st for the date of its issue they might have made efforts to get it out before Easter, for it is the sort of holiday reading that makes cold days indoors a delight instead of a penance. He writes entertainingly as ever on Park Brown, the most venerable spot in Sussex, on Sussex Saints and others, on birds in folk lore, in books, or in cages, on angling, and on leaving things alone. In the two last chapters entitled *Foreigners*, *Innkeepers*, *Journalists*, and *Sportsmen*, *Nudists*, and *Naturalists* some of the prejudices and tastes indicated in Dr Gosse's contribution to our *Grains and Scruples* columns last autumn are effectively underlined. To the list, given in an appendix of those among the great array of books about Sussex which have given pleasure to the author of this one, we would by his leave add another—"The Four Men" by Hilaire Belloc—which no lover of the county can afford to miss.

SUICIDE IN MENTAL HOSPITALS

A PAINSTAKING study of asylum suicide is described by Dr Eric Backlin who has examined the records of all the Swedish State asylums for 1901-33 (*Hygiea* Feb 15th 1937 p 65). The total was 159—only 18 of the victims were women—and though analysis by three-year periods shows a considerable increase this is accounted for by an equivalent increase in the number of patients under care. The size of the hospital did not seem to affect the suicide rate,

but this was highest in those where the average duration of the patients' stay was shortest—no doubt because these deal largely with acute psychoses. While the suicide rate outside asylums generally rises with age, it reached its maxima in the Swedish State institutions at 30-35 for men and at 30-35 and 45-50 for women. The large majority of the patients had previously betrayed suicidal inclinations at one time or another, and the fact that they were not under continuous observation was in some cases the fault of the hospital personnel. Backlin concludes that "without a well-trained staff, all other precautions are more or less worthless. But the work of the staff may in this respect be considerably lightened by certain local and administrative measures."

PSYCHOLOGY AND THE CHILD

Prof Sachs's achievement in neurology commands respect for his opinions, but a series of essays on the child³ will hardly enhance his reputation as a psychologist. The essays on infancy, school truancy, and adolescence are benevolent and commonplace. They tell us little more about the child's upbringing than any intelligent, well-balanced parent already knows himself. Page after page is devoted to good natured moralising, until suddenly the kindly author of the first eighty pages becomes the vitriolic opponent of everything that psychoanalysis has discovered and the guidance of children that a knowledge of it might suggest. Everyone realises that, taken at its face value, psychoanalytic theory is not only unpalatable but difficult to comprehend by those who have not studied it at first hand. It is unfortunate, however, that one who should write with authority has clearly not given to the theory the attention it deserves and the objective criticism that it merits at this stage in the history of psychopathology.

HIGH WALL

IT is rare for novels about private mental hospitals to ring true. The details in a book with the title⁴ appear to be based on first-hand knowledge, and, if it were not for the author's note asserting the contrary, those familiar with American institutions would be inclined to identify the place described. It is questionable whether there is much basis for the publisher's opinion that the theme of the book will interest the psychiatrist: the clinical details in the account of a young man who has an acute psychosis and subsequently forgets that he has murdered his wife are rather improbable. If the experiences of this patient in the Tri-State Sanatorium where he and a nurse fall in love with one another that are the main theme of the novel which will probably make a greater appeal to the lay public than to the doctor.

A DIRECTORY OF NURSING HOMES.—We have received from Benn Brothers Ltd (154, Fleet-street, London, E.C.4) a copy of the seventh edition of directory of nursing and convalescent homes, nursing homes, &c., in England and Wales and Scotland. The directory gives the names and addresses, arranged under counties of all registered nursing homes of the several classes of patients, and it is stated that the information has been obtained either from the home itself or from some responsible official source or both. The book which contains 280 pages, well bound in cloth and costs 4s.

¹ National Register of Medical Auxiliary Services. London: Tavistock House (North), Tavistock-square, W.C.1. 1937. Pp. 170. 2s. 6d.

² Traveller's Rest. By Philip Gosse. London: Cassell and Co., Ltd. 1937. 1 p. 281. 2s. 6d.

³ Keeping Your Child Normal. By Bernard Sachs. M.D., former President of the New York Academy of Medicine. New York and London: Paul B. Hoeber. 1936. Pp. 148. 5s. 5d.

⁴ High Wall. By Alan R. Clark. London: Michael Joseph. 1936. Pp. 288. 7s. 6d.

ADDRESSES AND ORIGINAL ARTICLES

PATHOLOGY OF THE ADRENAL GLAND
IN RELATION TO SUDDEN DEATH*

By C. KEITH SIMPSON, M.D. Lond.

ASSISTANT LECTURER IN FORENSIC MEDICINE AT GUY'S HOSPITAL

Two factors have elevated the adrenal gland to its present day importance in medicine. One was the publication by Addison of his famous blue book, for this prompted Brown Sequard to perform experimental extirpation of the gland for the first time and to study the characteristic manner in which death inevitably followed. The other factor is the renaissance of endocrinology which has taken place in recent years.

Sufficient scientific fact now invests our knowledge of the relations of this gland to the maintenance of life to enable a discussion of its relation also to sudden death from natural causes to be effected without recourse to vague theory. The conditions of sudden death however give the problem a distinctly forensic flavour and tend to limit the experience to those engaged in this work. Even here the figures are not impressive—it has been my experience to examine such cases at the rate of 1 in every 500 post-mortem examinations of subjects of sudden death from all causes including injuries.

Nevertheless the morbid anatomy of these glands with strict relation to sudden and unexpected death is a subject remarkably well defined. The figures are small but the limitation in disease processes is close. There are few morbid processes which result in the rapid destruction of the essential cortical element of both glands more or less simultaneously and these are the conditions of sudden death.

Development

In order properly to appreciate the effects of disease of the adrenal glands it is necessary to summarise certain of the facts known about their developmental anatomy and physiology.

Mammals alone possess the permanent enveloping relation of the cortex to the medulla seen in man (Fig 1) although the presence of the essential cortical tissues is universal as a distinct organ in the whole range of amniota—mammals, birds, and reptiles—and as a homologue the interrenal tissue in all anamniota as low as hags and lampreys. The arrangement in layers of this cortical element varies but its essential characters are constant.

In addition to this characteristic cellular cortex there is developed in mammals a third element a layer of cells deep to the true cortex and apparently concerned solely with the development of masculine character (Fig 1). Now at birth the weight of the adrenal gland is as much as a quarter that of the corresponding kidney; it becomes approximately a thirtieth of the weight of the kidney in adult life. This relatively large organ consists of a thin lamina of true cortex a wide zone of this third element the androgenic "masculinising" tissue and a small medulla. Immediately after birth there occurs a degeneration of the entire androgenic zone accompanied by an intense hyperemia. This may indeed prove the cause of a fatal catastrophe destructive hemorrhage taking place as a complication of

this intense hyperemic state. Reorganisation of the remains of this androgenic tissue normally takes place during the first year and thereafter the element exists only as a thin lamina coming into prominence on the rarest occasions as a malignant masculinising tumour of the cortex of one gland.

It is clear that except for the one short post-natal period during which the androgenic zone is under



FIG 1.—The normal histology of the gland. B, the capsule; A and C the adult cortex. The fetal cortex—the androgenic zone—is the pigmented layer separating B from the medulla A.

going its hyperemic involution, there is no period of life at which this tissue has any part to play in the causation of sudden death. It is entirely androgenic displaying an activity confined to sexual development.

During the development of the true cortex a free vascular circulation develops, the arterial tree ramifying in the capsule of the glands and sending from this plexus numerous capillaries which penetrate into the medulla to open out into sinuses from which venous drainage takes place. The significance of this rather unusual distribution of vessels lies in the predisposition to the impaction of arterial emboli, perhaps particularly emboli of malignant cells, and therefore to the development of secondary lesions. The matter will be discussed more fully in dealing with the morbid anatomy of the glands.

So far as the preservation of life is concerned attention may be directed solely to the cortex for that this is the essential element in the gland has been proved beyond all conceivable doubt by experimental extirpation. As to how much of one remaining cortex is required to stave off signs of deprivation experimental opinion varies. Excision of one gland and either cauterisation (Crowe and Wislocki 1914; Biedl 1910) or desiccation (Pende 1923; Stewart and Rogoff 1929) of the remaining medulla shows survival to be possible provided that from one-fourth (Bornstein and Gremels 1925) to one-eleventh (Langlois 1898) of the remaining cortex also survives intact. Administration of extracts of the cortex to adrenalectomised animals, doomed otherwise to die, retains for them conditions of physiological health which can be maintained almost indefinitely.

Relatively little attention has ever been paid to the question whether the adrenal cortex can regenerate sufficiently and with a rapidity necessary to prevent the development of insufficiency; any process resembling regeneration is seen so rarely in coming

with disease of the organ itself. In the most careful survey yet made MacKay and MacKay (1932) show that hyperplasia of the cortex of one gland does occur after operative excision of the other, but that it is an inactive process, except perhaps in the rat, takes nearly three months to develop, and requires the most encouraging conditions—conditions which

do not hold when disease is present. As a natural process, therefore, it need not occupy further attention. In so far as it concerns rapid destruction of the glands, regeneration is far too slow and uncertain to play any part in staving off insufficiency.

One further matter requires consideration. Accessory cortical tissue, occurring with some frequency in most animals, has been remarked upon with particular prominence in those of greatest bulk, including man, but it remains that accessory masses of true cortex—not androgenic—are uncommon, and when present never large enough to play any appreciable part in preventing fatal deprivation in the event of total destruction of both glands. My own

biochemical and attended by functional disorder rather than by any structural change visible to the eye. Even in the gland itself there are but few morbid processes to be found with any frequency under these conditions, three are commonly seen otherwise, and it is to these three that I wish to give attention. They are hæmorrhagic necrosis or hæmorrhagic infarction, acute caseative tuberculosis, and rapid metastatic growth invasion of the gland.

HÆMORRHAGIC NECROSIS OR INFARCTION

The adrenal glands are the site of hæmorrhage, often extensive, at two periods during life.

Neonatal type—A tendency to hæmorrhage first occurs during the hours and days immediately following birth (Levinson 1935), and as already explained, this is a misadventure which complicates the intense hyperæmia accompanying physiological involution of the androgenic (fœtal) cortex. It may occur irrespective of the nature or rapidity of delivery, but appears to be rather more frequent after difficult, precipitate, or forceps deliveries. It is properly attributed, under these conditions, to the added venous engorgement natural to such occasions, and is the more likely to provoke hæmorrhage in that it develops rapidly. Krause (1927) draws attention to the effects also of traction on the hilum of the gland, and of contraction of the musculature of the suprarenal veins which may follow traction, both increasing venous engorgement and adding to the already serious strain on the sinusoidal and capillary walls. As Lundau (1912) has, however, quite rightly pointed out, the process is primarily a physiological one, and not due to any variety of birth trauma alone. It may develop in the most carefully delivered Cæsarean sections. Both under these conditions and also under those responsible for hæmorrhage in later years, the extravasation of blood may break out through the capsule of the gland into the surrounding connective tissues, accentuating the shock like

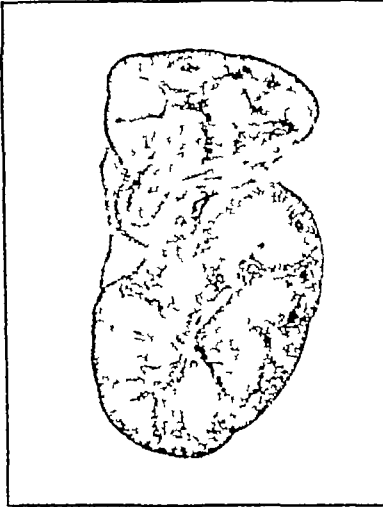


FIG 2—Hæmorrhagic infarction of the adrenal gland and the kidney in a new born infant

in most animals, has been remarked upon with particular prominence in those of greatest bulk, including man, but it remains that accessory masses of true cortex—not androgenic—are uncommon, and when present never large enough to play any appreciable part in preventing fatal deprivation in the event of total destruction of both glands. My own records of the last 2500 cases contain descriptions of two examples, one of which was a complete heterotopia of the cortical element of that side. The irregular cortical "hyperplasias" of advanced years are of course of no functional significance in this respect.

Pathological Anatomy

Pathological changes in the body after death from acute insufficiency of the cortex are, for practical purposes, limited to those by which the gland itself is destroyed. It is true that dilatation of the heart, congestion of the lungs or pueraria or other organs and the presence of bile in the gastric contents have been noted in addition, and even credited with some significance in relation to these deaths, but these are general findings and all too common to merit any such distinction. The systemic reflections of cortical insufficiency are almost entirely

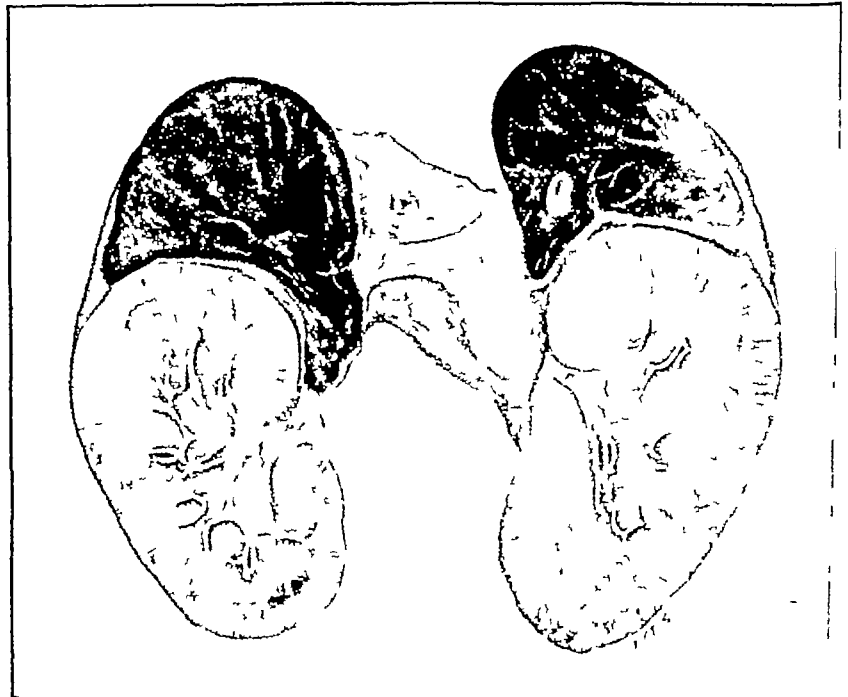


FIG 3—Acute hæmorrhagic necrosis of both adrenal glands in a girl aged 10 months following streptococcal septicæmia after pneumonia

character of the collapse which follows. The symptoms are often remarked to be identical with those of an acute upper abdominal crisis.

There is too another complication which is not perhaps so remarkable as it is often overlooked. Thrombosis of the adrenal veins often accompanies the effusion of blood into the substance of the gland. The vein is after all in close communication with sinusoids in which thrombosis has already occurred; it is a short vein half buried in the substance of a gland swollen and tense as the result of its distension by blood, and therefore most likely to become compressed adding stasis to the factors already encouraging thrombosis.

The process of thrombosis may also extend to involve the renal vein especially on the left side where the suprarenal and renal veins unite before entering the inferior vena cava. An example of this occurred under the following circumstances—

A primigravida of 35 had a normal pregnancy interrupted only at the thirty-seventh week by an attempted external version. The procedure was unsuccessful and at term delivery by a breech presentation took place being rendered additionally difficult by reason of extended legs and demanding final extraction under anaesthesia. At birth the child was alive though pale and rather shocked. It lived for 9 hours without causing alarm though it remained pale and cold. It collapsed quite suddenly without either convulsions or cyanosis about 9½ hours after delivery.

Post mortem there were no abnormalities beyond those shown in the adrenal gland and kidney (Fig. 2). Each side was affected similarly and thrombosis of both adrenal and renal veins was to be demonstrated microscopically.

A further specimen of the condition is shown in the Royal College of Surgeons museum (Spec. No. 9294.1) the presentation in this case being a vertex; there are no records of the other points of interest.

Purpuric type.—A second form of haemorrhagic necrosis also frequently attended by thrombosis of the attendant veins occurs at later periods of life when the androgenic zone hyperminia has subsided and takes place from entirely different causes unconnected with any physiological process. As a consequence of the development of a purpuric (haemorrhagic) tendency of whatever cause but more particularly following septicæmia—especially streptococcal—meningitis pneumonia and diphtheria the most extensive primary haemorrhages may occur into the substance of the adrenal gland of either one or more usually both sides disrupting its substance entirely and frequently distending the capsule to extraordinary proportions. When the process is symmetrical both cortices are destroyed with the greatest rapidity and acute adrenal insufficiency quickly develops. The condition is well illustrated by the following case.

A girl of 10 months and without previous illnesses developed a slight cough and became a little feverish, her temperature rose to 101° F. For nearly a week the condition was more or less stationary, then without apparent reason the child became most apathetic, lost appetite and within 8 hours vomited. Convulsive fits

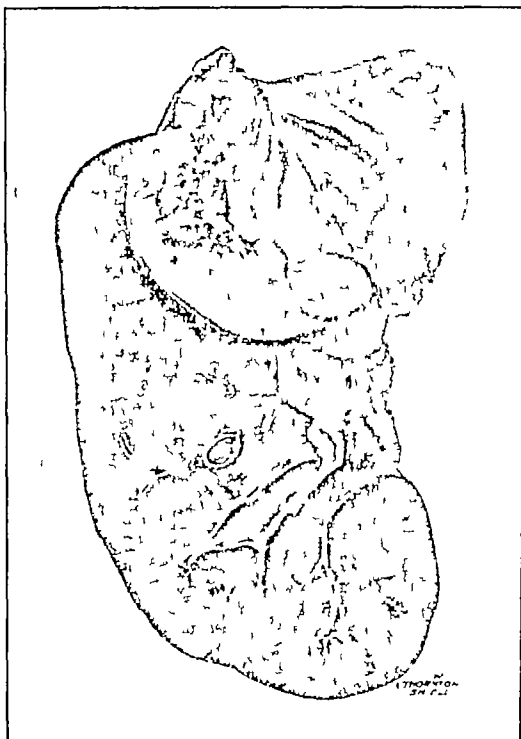


FIG. 4—Acute tuberculosis of the adrenal gland in a man aged

developed 2 hours later and continued intermittently for another 10 hours. Vomiting was repeated during this period. After 20 hours there appeared some respiratory embarrassment and coma developed. The child died suddenly in its mother's arms after 21 hours.

Post mortem there was a well-developed acute haemorrhagic pneumonia of streptococcal type with minute friable vegetations on the mitral valve cusps indicating the spread of infection into the blood stream, and bilateral haemorrhagic necrosis of the adrenals (Fig. 3). Moderate distension only was present but no intact cortical element was seen with the naked eye. Microscopical examination of the adrenal veins showed that thrombosis was not developed.

Scheidegger (1933) has described—in a similar case in a boy of 6½ years who died after massive bilateral adrenal haemorrhage—had developed in company with streptococcal meningitis—actual perforation of the capillaries by organisms morphologically identical with those seen in the meninges. The condition is also shown in the R.C.S. museum (Spec. No. 500.2) from a nurse at work in a base hospital in France in 1917.

In this case the infection was meningococcal, lasted 24 hours in all and was terminated by the development of a coarse purpuric eruption throughout the mucous membranes and skin. The adrenal glands were both disrupted by massive haemorrhages and tinged with



FIG 5 —Massive invasion of the adrenal gland by metastatic carcinoma arising from the stomach in a man aged 55

from those just described in connexion with streptococcal pneumonia and septicaemia. Examination of smears from the spleen showed numerous Gram negative diplococci (meningococci), the case was also one of septicaemia.

In severe burns the same pathological process is seen with some frequency, especially in medico legal work. Particularly when extensive, haemorrhagic necrosis of the adrenal glands may develop with fatal results, in spite of the absence of infection. I have records of cases developing as soon as four hours and as late as seven days after injury. Thrombosis is again fairly frequent. This lesion develops as a result of the combined capillary paralysis and increased capillary permeability taking place during the period of shock following burns. It is to be distinguished from the shock like crisis accompanying destruction of the adrenal cortex, in which there is no increase in the permeability of the capillaries and no increase in the fluid content of the tissue spaces, in fact there is a progressive dehydration of the tissues. The matter will be referred to again later.

Cystic haematomata may also develop either under conditions in which the capsule bursts and extravasation of clot occurs, or after repeated smaller haemorrhages none of which is sufficiently extensive to cause death. One gland alone may be involved. Spec. No. 19121 in the R.C.S. museum illustrates this very well.

A woman, aged 44, was in good general health but suffered from occasional pain in the left loin. Five years previously an operation had been performed for a large retroperitoneal haematocoele, lying in the region of the left kidney and 'causing intestinal obstruction'. The cavity, evacuated of its blood clot, was marsupialised to the abdominal wall and packed with gauze. None of the cyst wall was removed, recovery was uneventful. The second haemorrhage was heralded by 12 hours' vomiting, and operation revealed the condition shown. The relation between the first and second haematomata was not made clear.

ACUTE CASEOUS TUBERCULOSIS

In the large majority of cases of adrenal tuberculosis the disease, being secondary, pursues an insidious course and is attended by limiting fibrosis and calcification. Addisonian changes have usually become well developed before death takes place. Tuberculosis of the glands is relatively common, accounting for at least some 70 per cent (Guttman 1930) of cases of Addison's disease, but rapid destruction of the glands on both sides likely to cause acute cortical insufficiency is uncommon. As with growth, arterial embolism is almost certainly responsible for initiation of the disease, rapid caseous necrosis, and often bulky proliferative thickening by soft granulations bringing about a very considerable enlargement of the affected gland. The following case is a good example.

A metal worker, aged 22, arrived home on a game of football complaining of abdominal pain and nausea. He had received no injury during the course of the match. Vomiting occurred within half an hour of his arrival and was repeated about 1½ hours later. Shortly after this his wife noted twitching of the muscles and of the hands, and before assistance could be summoned he had collapsed in a major convulsive fit, intense cyanosis and marked respiratory embarrassment were present, and death took place a few minutes later. The total of definite illness was less than 3 hours.

Post mortem there was both primary and secondary apical disease of the right lung, both however progressing favourably, and massive soft caseous necrosis of both adrenals (Fig 4). There was no pigmentation of the skin or mucous membranes, and no evident loss of weight. This was confirmed by the wife who described her husband as having had no illness until the day of his death.

It is especially true of the adrenal gland that with but little primary pulmonary or mesenteric disease there may be the most gross destruction by secondary proliferative and caseous disease (Elsässer 1922). When this is developed rapidly signs and symptoms of acute insufficiency may appear, and as in this case prove quickly fatal. It is of course probable that a minimum of reserve cortex was present in some days or possibly weeks before death suddenly took place, the subject is on the brink of a catastrophe without having knowledge of the fact. The frequency with which exercise, shock, or external variations in temperature cause a precipitation of fatal attack is well known, and will be discussed later.

INVASION BY METASTATIC GROWTH

Although primary malignant growths of the cortex and the medulla of the gland may result in complete destruction of the cortex of one or both, that of the other gland is rarely if ever affected, and

deprivation of both cortices does not occur sudden death from acute insufficiency is not seen in company with primary malignant growth. Metastatic growth invasion is however a process more likely to result in the destruction of both glands since it is so commonly bilateral. This form occurred in a farm labourer who dropped dead in a field while stoning furrows.

He was aged 55 and, so far as was known, had not had any illness for at least 25 years and had not complained in any way up to the day of his death. He dropped dead whilst moving slowly along a plough furrow with several companions, removing stones.

Post mortem he was in a condition of perfect health as regards the heart and vasculature but bore a small ulcerative carcinoma of the body of the stomach with several glandular infiltrations in the porta hepatis, and adrenal glands having the appearance shown in Fig. 5. There is complete destruction of both cortices and in the absence of any other cause of death the primary tumour being small, and other organs being healthy acute adrenal insufficiency was held to be responsible.

Any organ may give rise to metastases in the adrenal glands but some appear to do so with striking frequency. Willis (1933) describes deposits in 27 out of 323 consecutive cases of carcinoma growth irrespective of the site of origin and remarks upon the frequency of deposit from primary tumours of the lungs and breast and from melanomata. In over a half of these 23 the deposits were bilateral.

It is striking how far the cortex may resist destruction remaining as a thin lamina stretched out over the growth mass. This fact added to the infrequency of large bilateral deposits is a reasonable explanation of the rarity of deaths clearly from acute adrenal insufficiency in a condition as frequently seen as metastatic deposit in both adrenal glands. Willis, although not interested in the symptomatology of his cases, notes the occurrence of asthenia and vomiting as terminal symptoms of cases showing adrenal deposits at autopsy but fails to denote their relation to adrenal insufficiency.

Now something of the vascular anatomy of the gland has already been said, with particular reference to the formation of metastases. Those penetrating cortical arterioles and capillaries running vertically down through the cortex to the medulla are most likely to afford embolic sites for growth and it is surprising therefore to find that the majority of these deposits are situated first in the medulla. There can be no doubt that the arterioles and the capillaries of the cortex are unusually wide and that growth emboli may for this reason make their way successfully to the medulla. Emboli have been observed in otherwise normal glands by Adams (1923) and by Robinson (1928) and arterial embolism is undoubtedly the route by which these growths take origin. They may occur primarily in the cortex or primarily in the medulla or in both together (see R.C.S. museum Spec. No. 2112-3 from penis). On rarer occasions growth may also infiltrate direct from contiguous structures or through the lymphatics (see R.C.S. museum Spec. No. 2044-1 lymphosarcoma).

Dosquet (1921) has suggested that the high frequency of adrenal metastases and cerebral metastases in lung cancer illustrates the susceptibility to growth deposit both ectodermal nervous tissues being embedded in a matrix rich in lipoids.

Pathological Physiology

No description of the morbid anatomy of the changes in the adrenal glands in relation to sudden

death would be complete without a proper analysis of the exact sequence of events that leads to death.

A close parallel exists between the symptoms and signs consequent upon experimental extirpation of the gland and those following deprivation from natural causes.

Under experimental conditions in dogs (Banting and Gairns 1928) surviving less than 50 hours for instance the most striking changes are as follows (Fig. 6).

(a) An initial period of surgical shock (absent under natural conditions):

Weakness
Loss of appetite
Vomiting
Convulsions and
Respiratory paralysis and these are accompanied by

(b) Oliguria or complete anuria, reduced temperature, oxygen consumption and body weight. The basal metabolic rate falls by as much as 25 per cent. Changes in the blood chemistry.

The onset of these changes is insidious the subject becoming apathetic and slow weak in the hind legs then lying prostrate refusing food and often vomiting. Muscular twitchings and then frank convulsions develop respirations becoming slow and laboured and eventually ceasing though the pulse may still continue.

In the case of bilateral haemorrhagic necrosis already described these features developed with remarkable faithfulness. This infant of 10 months in turn showed loss of appetite and apathy lay prostrate and then vomited developed fits went into coma breathing with great clutching breaths then dying in its mother's arms quite unexpectedly.

Adverse conditions may precipitate these changes as for instance in the case of acute caseous tuberculosis.

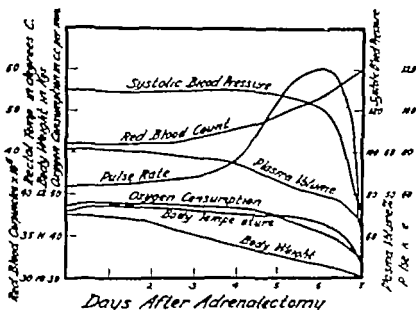


FIG. 6.—The physiological changes after adrenalectomy in dogs.

described in which death was precipitated by unusually vigorous exercise—playing football. In older persons exertion may be quite mild as with the case of growth infiltration in a man who was doing, no more than bending to pick up stones from a furrow and cast them aside. Extremes of temperature may cause failure in the same way. The mechanism of this will be discussed below in connexion with the changes in blood chemistry.

BLOOD CHEMISTRY

It is in the examination of changes in the chemistry of the blood that the causes of death become apparent

(Fig 7) They are related principally to alterations in hepatic and renal function consequent upon deprivation of the essential cortical hormone. Those changes consequent upon diminution of hepatic function are reflected in a rise in the cholesterol and a fall in blood sugar, this latter may be so pronounced as to reach convulsive levels (Porges 1910), and at the same time there occurs a remarkable diminution of both liver and muscle glycogen, restoration failing

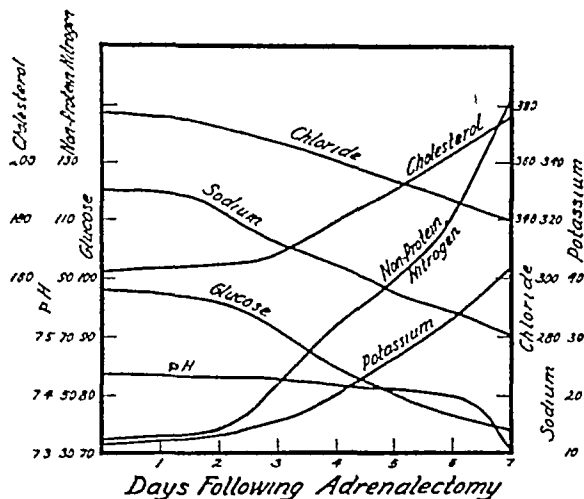


FIG 7—Changes in the blood chemistry after adrenalectomy

to take place after exercise. It is clear that the cortical hormone is essential either for the normal synthesis of glycogen by muscle, or for the maintenance of the normal balance between blood sugar and tissue glycogen.

Diminution of kidney function, related clearly to dysfunction of both glomerular and tubular elements, is reflected in a sharp rise in blood urea and other non proteinous nitrogen constituents of the blood, the urinary output being decreased.

The blood volume is reduced, together with the levels of both sodium and chloride, the urinary output of these substances vastly exceeding the intake over any period after the second day (Loeb 1923).

There is no deviation of fluid into the tissues, which indeed become dehydrated, and no passage of fluid into the red corpuscles, these becoming increased in number as the blood concentrates.

Sodium diminishes by as much as 15 per cent, on the other hand potassium values increase by as much as 12 per cent and magnesium by as much as 23 per cent effectively maintaining the falling osmotic pressure (Baumann and Kurland 1923). There can be no doubt that this unbalance of cations alone provides reasonable cause for the variations in muscle tone and movement observed.

In Fig 6 it will be noticed that the chloride loss is relatively less than that of sodium. This results, of course, in a decrease in bicarbonate and a disturbance in the acid base equilibrium, the pH falling.

Now other acute pathological conditions like diabetic acidosis and high intestinal obstruction, are also attended by much the same loss of inorganic base. They too are remarkable for their resemblance to the conditions of shock just as is acute cortical insufficiency and they too can be relieved by the restoration of sodium chloride. Immediate relief follows adjustment of the electrolyte balance (Soddu 1923). It must of course be remarked that the

condition is distinct from that of "surgical shock" it is rather an intolerance to the various influences that may cause shock. In some respects the conditions are analogous to those of hypocalcaemia after deprivation of parathyroid, and in this respect it would not be unreasonable to attribute to the adrenal cortex the control of sodium.

Conclusion

Although the loss of sodium and its attendant imbalance of electrolytes are the most striking of the processes developing in acute adrenal insufficiency, the clinical features are not adequately explained by this succession of changes alone. It is clear that both hypoglycaemia and dehydration have their parts to play, their importance in the mechanism of death cannot be ignored.

Each of these three biochemical anomalies developed in relation to cortical insufficiency has its experimental champion, Loeb supporting the changes in sodium metabolism, Britton emphasising the undeniable importance of hypoglycaemia, and Swingle and Pfiffner investing the loss of tissue fluid and plasma volume with chief responsibility. Each has claims which are irrefutable, and it is abundantly clear that all three collectively, rather than one individually, are to be held responsible for death.

I wish to express my gratitude to Dr A. D. Cowburn, Dr P. B. Skeels, and Dr L. F. Beccle, coroners respectively for South London, Metropolitan Essex, and South Essex, to whom I am indebted for certain of the specimens shown.

REFERENCES

- Adams F. D. (1921) *Arch. intern. Med.* **27**, 175.
 Banting F. G. and Gairns S. (1920) *Amer. J. Physiol.* **77**, 100.
 Baumann, E. J. and Kurland S. (1923) *J. biol. Chem.* **55**, 45.
 Bledl A. (1910) *Janus* **15**, 193.
 Bornstein A. and Gromels H. (1925) *Arch. path. Anal.* **254**, 409.
 Crowe S. J., and Wislocki G. B. (1914) *Bull. Johns Hopk. Hosp.* **25**, 287.
 Dosquet (1921) *Virchows Arch.* **234**, 481.
 Elsässer quoted by Mackenzie J. J. (1922) *Endocrinology and Metabolism* vol. II, p. 257.
 Guttman P. H. (1930) *Arch. Path.* **10**, 742, 8, 10.
 Krause P. J. (1927) *Beitr. path. Anal.* **78**, 283.
 Landau M. (1912) *Frankfurt. Z. Path.* **11**, 26.
 Langlois P. (1898) *Arch. de Physiol.* **10**, 124.
 Levinson S. A. (1935) *Amer. J. Surg.* **29**, 94.
 Loeb, R. F., Atchley D. W., Benedict E. M. and Leland J. (1933) *J. exp. Med.* **57**, 725.
 MacKay, E. M., MacKay L. L. and Addis J. (1932) *Ibid.* **56**, 255.
 Pende N. (1923) *N. Y. J. Med.* **118**, 469.
 Porges, O. (1910) *Z. klin. Med.* **69**, 341.
 Robson G. M. (1928) *Arch. Path.* **5**, 751.
 Soddu L. (1923) *Zell. allg. Path. path. Anal.* **57**, 163.
 Stewart G. N. and Rogoff, J. M. (1929) *Amer. J. Physiol.* **91**, 254.
 Willis R. A. (1934) *The Spread of Tumours in the Human Body* London pp 277-80.

ROYAL LONDON OPHTHALMIC HOSPITAL—The first full year's workings at the enlarged Moorfields Hospital show that annual expenditure was nearly £50,000—an increase of over £5500. More cases were treated than ever before, a total of 66,877 being reached. Building operations have cost £181,000 and supporters are appealed to for special donations to pay off the debt.

ROYAL WEST SUSSEX HOSPITAL, CHICHESTER. The Bishop of Chichester presided on March 24th at the annual meeting of the governors of this hospital. The financial report showed an excess of expenditure over income of £211 but the figure would have been but for a legacy of £2000. Subscriptions amount only to £1495 which was less than 10 per cent of the expenditure. It was stated that an economy committee set up last year had decided that the institution economically administered and that it would not be justifiable to close down a number of beds, considering the small sum involved. The West Sussex Associated Hospital Contributory Fund had contributed £4453 to the hospital.

DIPHThERITIC MYOCARDITIS

AN ELECTROCARDIOGRAPHIC STUDY

By NORMAN D. BEGG, M.D. Aberd. D.P.H.

MEDICAL SUPERINTENDENT TO THE DOROUGH INFECTION HOSPITALS, SOUTHEND-ON-SEA

COINCIDENT with the decline in laryngeal involvement practically all the serious manifestations of diphtheria have come to be associated with the so-called faucial forms of the disease. Here the diphtheria bacillus remaining *in situ* produces a variable amount of soluble exotoxin which has a primary affinity for heart muscle and nerve tissue. Death in diphtheria results much more commonly from cardiovascular involvement than from purely paralytic phenomena and it is towards the heart complications of diphtheria that attention will be directed in this paper.

The electrocardiographic approach to this problem is not a new one. American and continental writers in particular having described the gross conductive lesions of diphtheria and correlated them with degenerative changes in the bundle of His revealed post mortem passed on to study the steps in the development of minor disorders of cardiac function which had not previously been recognised. In this way serial electrocardiograms have come to occupy a position of some importance in prognosis although almost every investigator admits that occasionally they fail to explain the whole mechanism of circulatory collapse in diphtheria. Nor in the face of certain fundamental facts is it reasonable to expect them to do so. An electrocardiogram is merely a record of the changing electrical activity within heart muscle and affords no direct evidence of structural damage—although this latter may be inferred in many cases with a considerable degree of accuracy. Moreover an electrocardiogram cannot reveal changes occurring outside the heart muscle. Thus in cardiovascular failure which is primarily peripheral in origin a normal electrocardiogram may be expected even when death is imminent. But peripheral failure by itself is a rare event in diphtheria—in the vast majority of cases the cardiac mechanism is equally involved. Hence the importance of obtaining precise information on the state of at least part of the cardiovascular system need not be emphasised.

Scope of the Investigation

The present series comprised 100 cases of severe faucial diphtheria which were subjected to electrocardiographic investigation. In order to avoid moving severely ill cases four of the diphtheria wards were wired to the electrocardiographic department. A standard Cambridge instrument was used throughout and records were obtained by the falling plate method. The first electrocardiogram was taken immediately after admission thereafter records were obtained daily or at intervals of a few days during the first three weeks and subsequently at longer intervals until convalescence was established. It was hoped from such an investigation to obtain information on the following points: (1) the frequency of various heart changes in diphtheria as revealed by electrocardiography; (2) the prognostic significance of these changes; and (3) the persistence or otherwise of diphtheritic heart lesions.

Before proceeding to study these cases in detail certain generalisations may be permissible. In the

first place direct involvement of part or whole of the cardiovascular system occurs almost invariably within the first three weeks of an attack of diphtheria although of course lesions appearing in this stage may persist for many weeks. Secondly circulatory failure in diphtheria appears in two forms. These were distinguished by Schwentker and Noel (1929) on a purely pathological basis into an early and a late type.

Early circulatory failure appears within the first few days of disease and represents the sum of toxic effects on all organs. The principal clinical manifestations are a fall in blood pressure a small rapid pulse extreme pallor cyanosis and coldness of the extremities—a physical state more commonly associated with conditions of shock than cardiac failure. Carbohydrate metabolism is invariably deranged and there is an abnormal body response to the intravenous injection of dextrose in the direction of higher blood sugar findings. Electrocardiographic evidence of myocarditis may or may not be present but is rarely so pronounced as to indicate impending death—an event which frequently does ensue.

Late circulatory failure appears usually between the third and fourteenth day of the disease. Evidence of peripheral failure may be present but the outstanding feature is clinical and electrocardiographic evidence of damage to heart muscle or to the specialised tissue of the conducting system. Death is also a common event in late circulatory failure but almost any degree of myocardial damage may be recoverable in individual cases and on the whole, the outlook is relatively better than in early circulatory failure.

Results

The average day of death in this series from circulatory failure early or late was the tenth day of disease and the latest day recorded was the nineteenth day of disease. Two deaths from broncho-pneumonia and diaphragmatic paralysis were excluded. A further study of fatal cases reveals the fact that in 3 cases only could the associated circulatory failure be described as the early type and two of these showed some electrocardiographic evidence of myocarditis. In contrast deaths typical of late circulatory failure numbered 23 and in each case there was electrocardiographic evidence of myocardial involvement with or without the addition of a frank conductive lesion.

It is possible to divide the 100 subjects of this investigation into three groups consisting of (a) those showing no significant abnormality (b) those showing evidence of myocarditis without a gross conductive lesion and (c) those showing an associated conductive lesion. The results of such a classification are summarised in the Table.

It will be seen that 84 per cent of cases developed some electrocardiographic abnormality as a result of diphtheria and that in no less than 27 per cent of all cases this abnormality took the form of a conductive lesion the mortality in the latter group being more than twice that of the group showing no predilection for the conducting system.

A description of the chief abnormalities revealed in the three groups is given below and the significance of each is discussed. It is necessary to emphasise the fact that lesions merge into each other and that combinations of two or more lesions are by no means uncommon. Hence the classification used is only one of convenience in an attempt to study the salient abnormality of individual cases.

TABLE SHOWING CASE FATALITY IN VARIOUS GROUPS DETERMINED BY ELECTROCARDIOGRAPHIC CHANGES

—	No significant abnor- mality	Myocarditis							Total
		No demonstrable conductive lesion				Demonstrable conductive lesion			
		Slurred Q R S	Low voltage	Changes in T	Paroxys- mal tachy- cardia	Complete heart block	Bundle branch block	Intra- ventricular block	
Cases	16	8	6	35	8	12	6	9	100
Deaths	1	1	0	4	8	8	4	2	28
Case fatality per cent	6.2	12.5	0	11.4	100.0	66.7	66.7	22.2	28.0
Total mortality per cent	6.2	22.8				51.9			28.0

APPARENTLY NORMAL GROUP

As a normal electrocardiogram varies within tolerably wide limits, no significance has been attached to inversion of the T wave in lead III, or to a low, notched QRS complex in lead III. When the tracing is otherwise normal these variations appear constantly in successive records and remain uninfluenced by the disease. Alstead (1932) does not regard evidence of electrical axis deviation of the heart as significant. In his experience this change, unless it appeared in serial records during the course of the disease, was not associated with an abnormal heart clinically. I am in complete agreement with this observation and 5 such cases are included here. The remainder, showing physiological electrocardiograms throughout, included one in which death occurred from early circulatory failure. Electrocardiograms taken from this case on the fourth, seventh, and ninth day revealed no abnormality and clinical examination of the heart failed equally to anticipate the sudden circulatory collapse that took place on the tenth day of the disease.

MYOCARDITIS GROUP

The abnormalities in this group are associated with the ventricular portion of the tracing. Evidence of a minor prolongation of conduction time may also be present but the main characteristic is not a gross lesion of the conductive system.

QRS complex—This represents the first stage of ventricular activity. Each deflection of a normal QRS complex is recorded as two uninterrupted evenly shaded straight lines, which converge to a sharp point. Pronounced shading at any point is abnormal and results in a slurred QRS. In diphtheria slurring takes place on the down stroke of the R wave and in extreme cases results in a deep curved S wave (Fig 1 A)—a direct precursor of T wave changes. By itself it indicates a moderate degree of myocarditis which is unlikely to cause death in the absence of peripheral failure. However, of 5 cases exhibiting this abnormality, 1 died of early circulatory failure on the seventh day of disease.

T wave changes—The T wave is the final evidence of ven-

tricular activity. Normally it is upright and has an amplitude which should not be less than 0.15 millivolt. In diphtheritic myocarditis the T wave may be depressed, diphasic, iso electric, or inverted. A typical example is shown in Fig 1 B. T wave changes of any degree commonly indicate more severe myocarditis. In diphtheria, however, the outlook is reasonably good, since of 35 cases showing this abnormality only 4 died, death in 1 case being primarily due to broncho pneumonia.

Low voltage—Normally the R wave amplitude does not fall below 0.6 millivolt except in lead III or less commonly in lead I. Considerably lower voltage in all three leads of an electrocardiogram were occasionally recorded in this series. By itself this does not appear to have serious prognostic significance but when T wave changes are associated with low amplitudes (Fig 1 C) severe myocarditis may be assumed.

Disturbances of the pacemaker—The heart beat normally originates in the sinus node. Occasionally through nervous or other disturbances the pacemaker may not function properly and the beat may originate in other parts of the heart. For example, where the source of heart rhythm is abnormally situated some where in the auricular ventricular nodal tissue a record such as shown in Fig 2 is obtained. Extrasystole on the other hand arise independently of the normal heart rhythm and always from a focus outside the

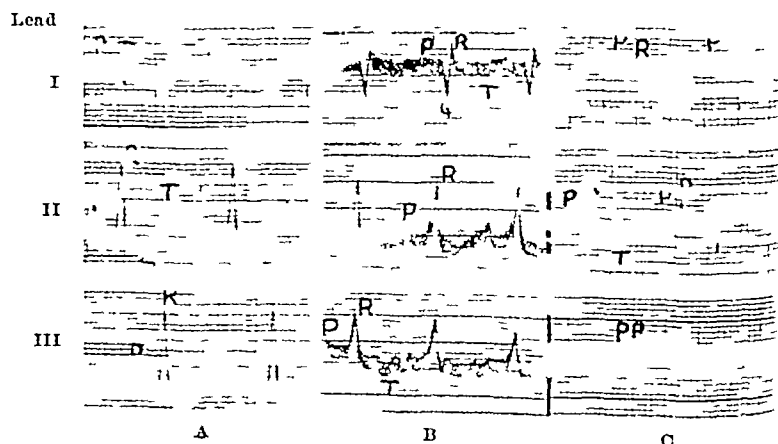


FIG 1—DEGREES OF MYOCARDITIS

- A—Slurring of the R wave and deep curved S in leads II and III and a biphasic T wave in lead I. Moderate myocarditis.
 B—The ascending limb of the R wave in lead II is splintered, there is slight intraventricular delay, the T wave is inverted in each lead. More severe myocarditis.
 C—The maximum voltage of the R wave in any lead is 0.5 millivolt. The T wave is inverted in leads I and II. Severe myocardial damage.

sino auricular node. In diphtheria they are usually ventricular in origin and in common with disturbances of the pacemaker do not appear to indicate a myo-

carditis of any degree if the record is otherwise normal.



FIG. 2.—The P wave is occasionally buried in or can be seen jutting out from the QRS complex. Nodal rhythm.

carditis of any degree if the record is otherwise normal.

Tachycardias not of sinus origin are paroxysmal in character and represent a rapid and regular succession

of premature contractions which may arise in an ectopic focus in the auricle, auriculo ventricular junctional tissues or ventricle. In the present series one example of paroxysmal auricular tachycardia (Fig. 3 A) ending fatally was observed. Paroxysmal tachycardia of ventricular origin (Fig. 3 B) was seen on 7 occasions and it is significant to note that each patient died within a few days of the appearance of this abnormality.

Ventricular fibrillation is probably a fairly frequent terminal event in a dying heart muscle although Josephthal (1934) records a case of post diphtheritic ventricular fibrillation which recovered. Attempts to obtain terminal pictures in this series were uniformly unsuccessful. This must be attributed to the time lost in manipulation of plates during an exposure; it is a method of obtaining records that is ideal for ordinary purposes but poses great disadvantages when a continuous record is desired. An electrocardiogram taken within half an hour of death is shown in Fig. 7.

Coronary thrombosis.—In spite of suggestive clinical findings, such as severe precordial pain and sudden termination in heart sounds, the RS-T segment changes characteristic of coronary thrombosis were never seen in this series. Other gross lesions may obscure the electrocardiographic picture in individual

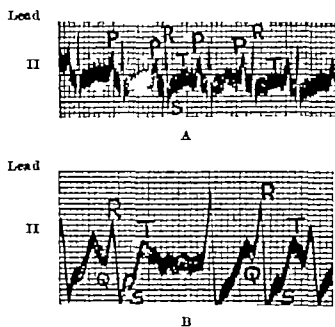


FIG. 3.—PAROXYSMAL TACHYCARDIA.

A.—The rate is rapid (180) the rhythm is regular the distinct peaked P waves identify the auricular source of the tachycardia. Paroxysmal auricular tachycardia.
B.—The rate is rapid (176) the rhythm is irregular the P waves are buried in distorted ventricular complexes. Paroxysmal ventricular tachycardia.

CONDUCTIVE LESIONS

Complete heart block.—Auriculo ventricular block may occur in three stages. The earliest manifestation is a delay in auriculo ventricular conduction time resulting in a prolongation of the P-R interval in the electrocardiogram. A further delay will lead to dropped beats at regular or irregular intervals. If conduction is still further disturbed there occurs a complete dissociation between auricles and ventricles which respectively adopt independent rhythms (Fig. 4 A). A characteristic of diphtheritic lesions of the main bundle of His is that complete auriculo ventricular dissociation appears usually without preliminary changes in the P-R interval. In this respect they differ considerably from complete heart block arising

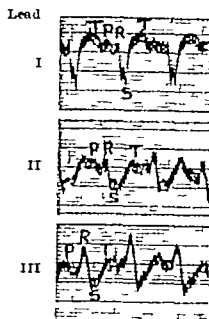


FIG. 5.—The wide notched QRS complexes are directed upwards in lead I and downwards in lead II and III. The T wave in lead I is opposite in sign to the main initial deflection but in lead III it is in the same direction. Atypical right bundle-branch block.

from causes other than diphtheria. Marvin (1925) however unlike other observers did record a significant P-R delay before the onset of complete heart-block. Preliminary prolongation of the P-R interval was not seen in this series, the usual sequence being some abnormality in the ventricular portion of the tracing and then suddenly complete dissociation. Diphtheritic dissociation differs from other forms of complete heart block in two other respects.

In the first place it may be very transient complete heart block in one case in this series lasted only 24 hours. Secondly, it is not invariably associated with a slow ventricular rate. In some cases the ventricular rate is fast.

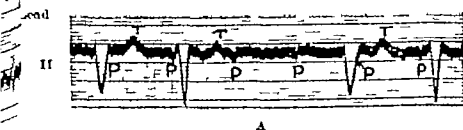
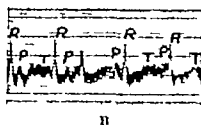


FIG. 4.—COMPLETE HEART BLOCK.

A.—The ventricular rate is slow (23) the auricular rate is 85. There is complete auriculo ventricular dissociation a ventricular extra-systole occurs regularly after each ventricular beat. Complete heart block with coupled beats.

B.—The ventricular rate is fast (135), the auricular rate is 100. The auricle and ventricle are beating independently and regularly. Complete heart block with fast ventricle.



cinated with a fast ventricular rate (Fig. 4 B) may be impossible to detect on ordinary clinical examination. The outlook in the presence of complete heart-block has invariably been stated to be grave. In this series it was no worse than in the presence of bundle branch



FIG 6—The QRS complex is wide (0.12 sec) notched and directed upwards in each lead, the T wave is upright. Intraventricular block.

block, a third of the cases in both categories recovered.

Bundle branch block.—Conduction of the wave of excitation may be partially or completely blocked in its passage through either the right or the left branch of the bundle of His. Typically the electrocardiographic evidences of complete block of a branch of the bundle of His consist of a wide notched R wave and a T wave opposite in sign to the main initial deflection. Less commonly the T wave in lead I or lead III may fall in the same directions as the QRS complex (Fig. 5). In this series 6 cases showed bundle branch block, the right branch of the bundle being involved only in one instance.

Intraventricular block.—Oppenheimer and Rothschild (1917) in pointing out the seriousness of bundle branch lesions in diphtheria included in their description a partial interference with one of the main bundle branches. There is some doubt whether electrocardiograms showing incomplete block do represent interference with conduction in the fine ramifications of the Purkinje network or in the ventricular muscle. Characteristically the electrocardiogram reveals a slurred or notched QRS widened beyond the normal limit of 0.1 sec and a T wave which may be upright, depressed, or inverted (Fig. 6). Of all conductive lesions in diphtheria intraventricular block appears to be the least serious. Only 2 cases showing this lesion died, and in 1 of these the case made a complete electrocardiographic and clinical recovery from the heart lesion, but succumbed later to diaphragmatic paralysis.

RECORDS IN CONVALESCENCE

Contrary to expectation electrocardiography does not yield much evidence of persistent heart damage after diphtheria. Undoubted examples of permanent lesions have been recorded but, unless one believes with Butler and Levine (1930) that diphtheria predisposes a heart to earlier sclerosis than would normally have taken place, the striking feature of the severe myocardial lesions in diphtheria is that recovery in non-fatal cases should apparently be so complete. Probably the true incidence of permanent lesions after diphtheria will not be assessed until a representative group of children are investigated periodically throughout an attack and for several years to follow. In this respect the observations recorded here are open to the same objection in that they represent only part of a picture. However, serial electrocardiograms of 57 cases who had

developed definite heart lesions in the course of diphtheria were continued until convalescence was established. On two occasions only was any evidence of significant electrocardiographic abnormality obtained. This consisted in one case of a minor degree of widening of the QRS complex following complete heart-block and in the other case low heart voltages were recorded following bundle branch block.

Summary

1 Investigation of a series of 100 cases of severe diphtheria shows that the great majority develop cardiac abnormalities within the first three weeks of the disease. In many cases the exact nature of the abnormality cannot be recognised except by the auxiliary evidence of an electrocardiogram.

2 If complete heart-block, bundle branch block or paroxysmal tachycardia appear in electrocardiograms during the course of diphtheria, the outlook as regards recovery is relatively bad.

3 In the presence of other evidence of myocardial involvement, including intraventricular block, the prognosis is reasonably favourable.

4 A normal electrocardiogram, particularly within the first few days of the disease, does not preclude the possibility of a sudden circulatory collapse, and, in this respect, clinical examination may be equally misleading. Probably at this stage of the disease an intravenous sugar tolerance curve remains the most sensitive guide to prognosis.

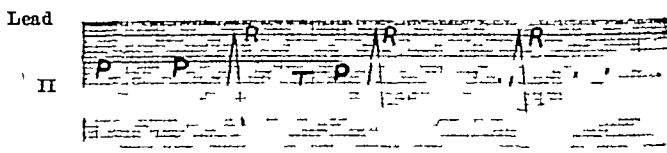


FIG 7—There is complete auriculo-ventricular dissociation, the ventricular complex recurs irregularly and consists of a large irregular R wave followed by an abnormal S-T phase. Complete heart block of the myocardium.

5 Except in a small proportion of convalescent lesions, recovery after diphtheritic myocarditis appears to be complete as judged by electrocardiograms taken in convalescence.

I wish to acknowledge my indebtedness to Dr E. H. Harries for the facilities afforded me in obtaining these records since I left the North Eastern Hospital and for his permission to publish this paper.

BIBLIOGRAPHY

- Alstead S. (1932) *Quart. J. Med.* 1: 277.
- (1933) *Lancet* 1: 413.
- Begg N. D. (1935) *Ibid.* 1: 480.
- Butler S. and Levine S. A. (1930) *Amer. Heart J.* 5: 599.
- Chamberlain E. N. and Alstead S. (1931) *Lancet* 1: 970.
- Hoskin, J. (1926) *Ibid.* 1: 1141.
- Hoysne A. and Welford N. T. (1934) *J. Pediat.* 5: 642.
- Jones, T. D. and White P. O. (1927) *Amer. Heart J.* 3: 199.
- Josephthal F. (1934) *Arch. intern. Med.* 26: 15.
- Kjess P. V. (1931) *Arch. Kinderheilk.* 94: 97.
- Marvin H. M. (1925) *Amer. J. Dis. Child.* 29: 433.
- Nathanson M. H. (1928) *Arch. intern. Med.* 42: 23.
- Oppenheimer B. S. and Rothschild M. A. (1917) *J. Am. med. Ass.* 69: 129.
- Place E. H. (1932) *New Engl. J. Med.* 207: 864.
- Ridd W. D. (1930) *Amer. Heart J.* 5: 524.
- Schuppeler H. (1935) *Jahrb. f. Kinderheilk.* 95: 135.
- Schwentker F. E. and Noel W. W. (1920) *Bull. Johns Hopk. Hosp.* 45: 276.
- Stecher R. M. (1928) *Amer. Heart J.* 4: 545.
- Warthin A. S. (1924) *J. infect. Dis.* 35: 32.

VICTORIA COTTAGE HOSPITAL, BARNET.—The Princess Royal on March 16th reopened this hospital which has been closed since last summer for extensions. Extensions cost £21,000.

THE ACTION OF CORPUS LUTEUM HORMONE ON THE HUMAN MENSTRUAL CYCLE

By THOMAS N MORGAN M.D. Aberd.

LECTURER IN THE DEPARTMENT OF MATERIA MEDICA, UNIVERSITY
OF ABERDEEN, VISITING PHYSICIAN TO THE WOODHEAD
HOSPITAL AND CLINICAL TUTOR AT THE
ABERDEEN ROYAL INFIRMARY AND

SYDNEY G DAVIDSON F.R.C.S. Eng

ASSISTANT IN THE DEPARTMENT OF SURGERY UNIVERSITY OF
ABERDEEN, VISITING SURGEON TO THE WOODHEAD
HOSPITAL AND ASSISTANT SURGEON TO THE
ABERDEEN ROYAL INFIRMARY

THE physiology of the menstrual cycle has in recent years been considerably clarified by the isolation of the ovarian hormones and the demonstration of their pharmacological actions. The present state of knowledge has however been reached mainly as a result of animal experiment. It is clear that the rational use of these hormones in therapeutics will only be possible when the part which they play in the human menstrual cycle is fully understood and the important details of optimum dosage and time of administration have been obtained by experiment in the human subject. The experiments to be described in this communication were carried out on normal women with the object of obtaining more complete information regarding the function of the corpus luteum and to determine the dose of corpus luteum hormone required to produce an effect similar to that produced by the corpus luteum itself.

It is now well recognised that treatment of castrated animals with oestrone prevents the development of the regressive changes in the genital tissues consequent upon castration. E. Allen (1932) has shown that the injection of oestrone into castrated monkeys (*Macacus rhesus*) will so far simulate the action of endogenous hormone as to produce not only growth of the uterine endometrium comparable to that seen in the normal animal about the middle of the menstrual cycle but also reddening of the sexual skin a phenomenon which occurs normally in *Macacus rhesus* in the mid-menstruum. Zuckerman and Morse (1935) have been able to produce in primates a cystic condition of the endometrium similar to that which may occur in woman and which is associated with over production of oestrone (metropathia haemorrhagica). This condition has also been produced in the human subject by prolonged treatment with oestrone (Kaufmann 1934).

CONTROL OF THE ENDOMETRIUM

So far as the early part of the menstrual cycle is concerned therefore the growth of the uterine endometrium would appear to be under the control of the ovarian oestrone. With regard to the latter part of the cycle it has for long been thought that the change in structure which the endometrium undergoes after ovulation is due to the influence of the corpus luteum. This conjecture is supported by the finding of Corner and Allen (1929) that the injection of an active extract of corpus luteum into the oestrus rabbit alters the structure of the endometrium from the oestrus state to that typical of pseudo-pregnancy. It was subsequently shown by W. M. Allen (1930) that the hormone of the corpus luteum could only produce such a change if the endometrium was first acted upon by oestrone. Later Hsaw Meyer and Ferold (1930) and Smith and Engle (1932) demonstrated the fact that the typical pre-

menstrual endometrium could be produced in castrated rhesus monkeys by treatment with oestrone followed by corpus luteum hormone. The final integration of these findings and their application to the human menstrual cycle was performed by Kaufmann (1934) who succeeded in reproducing a complete menstrual cycle associated with the typical changes in the endometrium in castrated women by injecting 250 000 mouse units of oestrone every fourth day for 15 days and following this with 21 clinical units of corpus luteum hormone daily for five days. Cessation of the injections was followed by true menstrual bleeding.

It has thus been established that the cyclical endometrial changes which precede menstruation are under endocrine control, but the cause of the phenomenon of menstruation itself remains obscure. That the hormone of the corpus luteum is not necessary for menstruation is suggested by the observation that in both monkeys (E. Allen 1927) and women (Corner 1933) haemorrhage can occur regularly from the uterus in the absence of ovulation and therefore in the absence of a corpus luteum. Further it has been shown by E. Allen (1927) that, after endometrial growth has been induced in monkeys by oestrin the subsequent cessation or diminution of the dose is followed by uterine bleeding. A similar finding has been made in the case of women by Werner and Collier (1933). The view thus gained support that normal menstruation occurs as a result of the sudden deprivation of oestrin. This hypothesis is however apparently confounded by the experiments of Engle et al. (1935) who showed that bleeding following the cessation of oestrin injections can be prevented by the administration of corpus luteum hormone and that stopping the corpus luteum treatment is followed by bleeding within 4 to 6 days. We have thus at least two possible explanations of the cause of menstrual haemorrhage: (1) that the haemorrhage occurs when the level of blood oestrons falls below that necessary to maintain the endometrium and (2) that the haemorrhage and degeneration of the endometrium result from the loss of corpus luteum hormone consequent upon degeneration of the corpus luteum.

If the former hypothesis is correct it should be possible to postpone the onset of menstruation in women by the continuous administration of oestrone. This has been tested by Zuckerman (1936) and others who find that the administration of oestrone in daily doses of 250-1000 rat units fails to prevent the onset of menstruation unless the injections are begun before the time of ovulation. This finding is explained not by a direct action of the oestrone on the endometrium but by its action in inhibiting the production of gonadotropic hormone by the hypophysis so that in the case where oestrone is administered early in the cycle ovulation fails to occur and no corpus luteum is formed. The endometrium thus remains under the unopposed influence of the exogenous oestrone and bleeding is delayed so long as the administration is continued. If however injections are begun after a corpus luteum is formed menstruation occurs at the expected time in spite of the continuous administration of oestrone. This interpretation of Zuckerman's results is supported by the observation of Hsaw Meyer (1935) that in monkeys the administration of oestrone will prevent the onset of bleeding after ovariectomy only if the operation is performed during the early part of the cycle, i.e. an active corpus luteum is present in the ovary.

As already indicated our experiments out to test the second of these

determining first if it is possible to delay the onset of menstruation by the continuous administration of corpus luteum hormone during the latter part of the menstrual cycle, and secondly if, and in what dose, a corpus luteum hormone would replace the function of the normal corpus luteum. The hormone used was Proluton (Schering Kahlbaum). The active principle in this preparation is a synthetic derivative of stigmasterol and has the same formula as that described for the natural hormone of the corpus luteum by Butenandt and Schmidt (1934), 5 mg has a potency of 20 clinical units. The preparation was tested by us to prove its activity in altering the structure of the rabbit endometrium, and in diminishing the motor activity of the uterus, and was found to possess both these properties.

It was necessary to perform a number of control observations, and accordingly the experiments will be described in three parts—

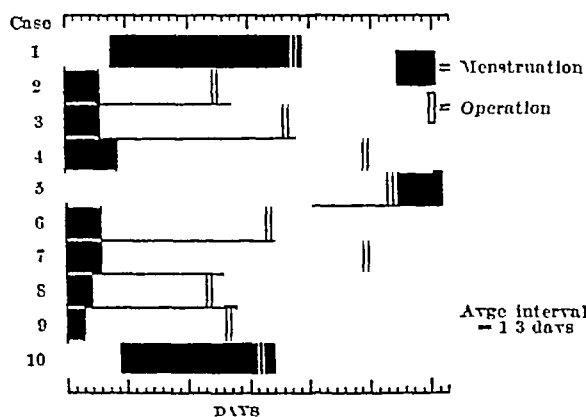
- Observations on the effect of excision of the recent corpus luteum on the menstrual rhythm
- Observations on the effect of administering corpus luteum hormone in the latter part of the menstrual cycle
- Observations on the effect of substituting exogenous hormone after surgical removal of the corpus luteum

EFFECT OF SURGICAL REMOVAL OF THE CORPUS LUTEUM

For this part of the investigation female patients requiring operation for chronic appendicitis were utilised, and only those in whom there was no evidence of any gynaecological disorder, and who could provide an accurate menstrual history, were included in the series.

Where possible the patient was observed in the ward during one menstruation and the operation was performed at a selected time in the succeeding intermenstruum. In this way ten cases were operated upon after the 15th day of the cycle counting from the first day of the previous menstruation, and at the operation the ovaries were inspected and the recent corpus luteum excised. In each

CHART 1—*Laparotomy with Excision of Corpus Luteum*



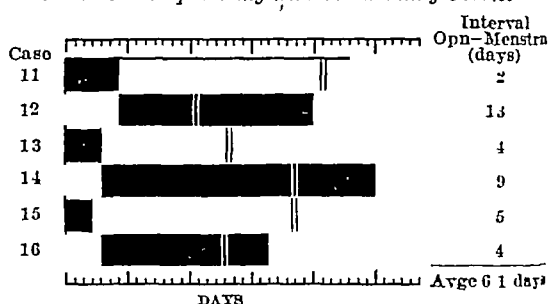
case it was examined histologically to corroborate its age. It was observed that in cases operated on near the middle of the menstrual cycle the corpus luteum was fresh and incompletely formed, whereas in two cases operated upon late in the cycle the histological appearance of the gland indicated that ovulation had occurred much later than the 15th day of the cycle. On the other hand it was never found that a case operated on shortly after the 15th day showed a degenerating gland.

The time of onset of uterine bleeding carefully noted in each case, was never longer than 48 hours after the operation, the average time of onset throughout the series being 32 hours (Fig 1).

According to Pratt (quoted by Bartelmez 1937) the effect of surgical removal of the corpus luteum in precipitating the onset of menstruation is not specific, and any manual manipulation of the ovary may induce premature menstruation. To determine therefore if the operation per se, or the manipulation necessary in excising the corpus luteum without actual removal of the gland, would be sufficient to precipitate menstruation, two additional sets of observations were made.

CONTROL GROUP 1—Cases selected upon the criteria already described were submitted to operation in the latter

CHART 2—*Laparotomy without Handling Ovaries*



part of the intermenstruum, and in these the pelvic viscera were not disturbed, the ovaries being as far as practicable inspected to ascertain the presence of a corpus luteum without handling them in any way. In 4 cases in this group the onset of menstruation was not accelerated and occurred at or about the expected date. In 2 cases menstruation appeared earlier than the expected time but in no case did menstruation occur as soon after operation as in the previous group (Fig 2).

The average interval between operation and menstruation was 6.1 days.

CONTROL GROUP 2—A third group of 7 cases was examined in the same way, but in these the ovaries were delivered at the wound and handled, though the corpus luteum was not removed. In 4 cases the onset of post-operative menstruation was not hastened. In Cases 19, 21, and (Fig 3) an interval of 5, 3, and 6 days respectively elapsed between the operation and the appearance of menstruation. It is interesting to note that in Cases 18 and 23 small cysts were excised from the ovaries.

Even when, therefore, the traumatism of an ovary was as great as in the cases in which the corpus luteum was removed, the occurrence of post-operative menstruation was delayed for 5, 5, and 6 days.

THE ACTION OF CORPUS LUTEUM HORMONE ON MENSTRUATION

The experiments just described have shown that excision of the corpus luteum precipitates the onset of menstruation. To test the theory that menstruation is brought about by loss of the corpus luteum, an attempt was next made to delay the onset of bleeding in normally menstruating women by intramuscular injection of proluton. The investigation was carried out on patients submitted to prolonged hospitalisation on account of chronic pulmonary tuberculosis.

Patients presenting a history of regular menstruation were selected, and the interval between successive menstruations was determined over 3 or 4 months in each. Shortly before the onset of the expected menstruation intramuscular injections of proluton were begun and continued daily until menstruation started. Since it was impossible in most cases to foretell with any degree of certainty the day of onset of menstruation, the

received courses of injections of the hormone of different duration. The daily dose was varied from 20 clinical units to 40 clinical units. It will be seen from the Table that the administration of corpus luteum hormone in doses ranging from 60 clinical units over a period of 3 days to 520 clinical units over a period of 13 days did not delay

Case No.	Control duration of intermenstrual periods in days.		Daily dose of proluton (clinical units)	Injection period in days	Total dose (clinical units)	Duration of treated cycle in days.
24	28	30	40	3	80	33
25	40	38	32	40	11	440
26	28	31	31	20	3	60
27	27	40	34	20	3	60
28	20	24	30	40	6	240
29	30	28	30	20	3	60
30	34	31	31	0	3	60
31	28	20	10	40	10	400
32	3*	32	33	40	5	200
33	32	30	33	40	11	440
34	34	34	32	40	11	440
35	34	32	32	40	0	360
36	30	30	28	40	11	440
37	28	20	30	10	13	50
38	28	28	30	40	13	520

Onset of Menstruation—Spontaneous in each case

In Cases 25, 34, and 36 the intermenstrual interval lasted 43, 44 and 38 days that is 10, 6 and 7 longer than the average duration of three normal cycles but we have observed even greater variations to occur spontaneously in the menstrual rhythm

CHART 3—Laparotomy with Manipulation of Ovaries



normal women so that no importance can be placed on this finding. Of great significance is the fact that in each case of this series menstruation occurred spontaneously during the course of the injections.

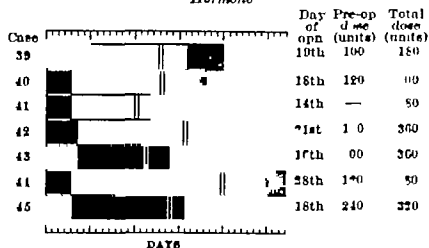
It is apparent from these experiments that the intramuscular injection of proluton in doses of the order of 500 clinical units will not delay the onset of menstruation and since excision of the corpus luteum is constantly followed by menstruation within most 48 hours one may fairly conclude either that the onset of natural menstruation is not determined by degeneration of the corpus luteum but by some other factor or that the substance injected was capable of stimulating the action of the natural hormone. It was necessary therefore to determine whether far injection of proluton would replace the action of the corpus luteum after it had been excised.

EFFECT OF ADMINISTERING PROLUTON BEFORE AND AFTER SURGICAL REMOVAL OF THE CORPUS LUTEUM

Excision of the corpus luteum was carried out in seven patients coming to operation for chronic abdominal disease.

The cases were operated upon about the middle of the menstrual cycle and injections of proluton in daily doses of 40 clinical units were begun at various times before operation and continued after the operation until menstruation occurred. The maximum pre-operative injection

CHART 4—Excision of Corpus Luteum and Injection of Hormone



period was 6 days, giving a total dose of 240 clinical units. As in the previous cases the corpus luteum was examined histologically to ascertain its approximate age. In this series, two cases menstruated within 48 hours, two in 72 hours, two in 4 days and in one menstruation was delayed for 6 days, after which it occurred spontaneously. As will be seen from Fig. 4 the time after operation at which bleeding occurred bore no relation to the dose of proluton administered before the operation.

Although the interval between operation and menstruation was longer than the interval in the first series, where the corpus luteum was excised and no proluton given, hemorrhage occurred spontaneously in every case.

DISCUSSION

The foregoing observations show that excision of the corpus luteum is constantly followed within 48 hours by menstruation and it is clear from the control experiments that this result is not due to trauma of the ovaries. At first sight this finding seems to support the theory that the onset of menstruation is caused solely by degeneration of the corpus luteum and consequent loss of its secretion, a view supported by the fact that the intramuscular injection of hormone before and after excision of the corpus luteum produced a variable but significant delay in the onset of bleeding. It was however not found possible to delay indefinitely the onset of menstruation artificially induced nor was there any constant relation between the amount of the hormone injected and the delay produced. It is of course well recognised that the absorption from the tissues of fat soluble drugs injected in oily solution is slow and uncertain a fact which may serve to explain the relative inefficiency of replacement therapy. If this explanation is correct, it is a significant point which all those who employ corpus luteum hormone for therapeutic purposes should keep in mind. On the other hand, the fact that it was found impossible to delay in any way the onset of natural menstruation by the injection of doses of the hormone much larger than those which were effective in delaying menstruation induced artificially raises the important question as to whether the onset of normal

menstruation is determined solely by degeneration of the corpus luteum. Indeed our observations suggest the possibility that naturally recurring menstruation is brought about by some factor other than or additional to degeneration of the corpus luteum, and consequent lowering of the level of luteal hormone in the blood.

SUMMARY

1 Excision of the recent corpus luteum is followed within a period of 1·3 days (32 hours) by menstrual bleeding having all the characters of normal menstruation.

2 Surgical manipulation of the ovaries, leaving the corpus luteum intact, is not followed by menstruation until a much longer period, average 6·1 days.

3 Injection of proluton, a substance having the actions of the corpus luteum hormone, before and after excision of the corpus luteum may cause a delay of 3-6 days in the onset of menstruation.

4 The injection of proluton in doses up to 520 clinical units into normal women during the latter part of the menstrual cycle does not delay the onset of menstruation. It is possible, therefore, that the onset of normal menstruation is not determined solely by degeneration of the corpus luteum.

We desire to express our thanks to Prof David Campbell for valuable advice and criticism in the performance of this work, and to Dr Harry Rae, the medical officer of health, for placing the facilities of Woodend Hospital at our disposal.

REFERENCES

- Allen E (1927) *Contr. Embryol. Carnegie Instn.* 19 1
 — (1932) *Sex and Internal Secretions*. Baltimore p 446
 Allen W M (1930) *Amer. J. Physiol.* 92, 612
 Bartelmez G W (1937) *Physiol. Rev.* 17 62
 Butenandt P and Schmidt J (1931) *Ber. ges. Physiol.* 67 1001
 Corner G W (1933) *Medicine*. Baltimore 12 70
 — and Allen W M (1929) *Amer. J. Physiol.* 88 326
 Fagle E T, Smith P E and Shelesnyak M O (1935) *Amer. J. Obstet. Gynec.* 29 787
 Hisaw F L (1935) *Ibid.*, p 638
 —, Meyer K K and Ferold H L (1930) *Proc. Soc. exp. Biol. N.Y.* 27 400
 Kaufmann C (1934) *Proc. R. Soc. Med.* 27 849 857
 Smith P E and Engle E T (1933) *Proc. Soc. exp. Biol. N.Y.* 29 1235
 Werner A A and Collier W D (1933) *J. Amer. med. Ass.* 100 633
 Zuckerman S (1936) *Lancet* 2 9
 — and Morse A H (1935) *Surg. Gynec. Obstet.* 61 15

THE VALUE OF PERSISTING WITH DRIP BLOOD TRANSFUSION IN SEVERE PROLONGED HÆMORRHAGE

By ALAN W CUBITT, B M Oxon, F R C S Eng
 SURGICAL REGISTRAR, MIDDLESEX HOSPITAL, LONDON

THE mortality from hæmorrhage is still sufficiently high to cause considerable dissatisfaction with present methods of treatment. The first aim is to stop hæmorrhage by the most direct means possible. In some cases it will be clear that surgery is the method of choice, in others it will be equally clear that surgery offers no prospect of stopping the bleeding. In another group of cases it may be very difficult to decide whether or not an operation gives the best chance of success and it may be only after careful observation of the progress of the case that the right decision can be made.

In all these circumstances the transfusion of blood may be necessary during the period of hæmorrhage. It may be given with one or more of three main objects: to make possible and safe the direct surgical intervention which may be necessary for the arrest

of hæmorrhage, to protect a patient, already dangerously exsanguinated, from the risk of further loss of blood, or to maintain life until the hæmorrhage stops. After arrest of hæmorrhage replacement of some of the blood lost may be desirable for convalescence or for other reasons.

The introduction by Marmott and Kekwick (1918 and 1936) of the continuous drip method of blood transfusion has overcome most of the technical difficulties of giving slowly and safely adequate quantities of blood over a long period. The quantity of blood required may occasionally be very large. It is above all in those cases in which the need for operation is in doubt that the method should make the right decision possible and the right treatment practicable. We can now afford to observe the progress of the patient and estimate the probability of spontaneous arrest of the hæmorrhage, the grave risk to life either of too long delay or of precipitate intervention.

Too low a hæmoglobin content of the blood may endanger life either by giving too small a margin of safety in case of increased hæmorrhage or by lowering the resistance that the patient succumbs to broncho-pneumonia or some septic complication of his condition. Where prolonged bleeding is occurring from the alimentary tract the question of nutrition becomes of vital importance. Whatever may be our opinion of the influence of diet on the continuance of hæmorrhage, it can hardly be doubted that malnutrition is an added factor of danger, that intravenous and rectal alimentation over a prolonged period is a poor substitute for the normal method. Nourishment can be given by mouth with greater confidence if blood can be supplied in quantities sufficient to keep the patient above the danger level.

This paper is written and the cases recorded in the hope of showing that when really large amounts of blood are necessary they can usually be obtained, can be safely given and that persistence and faith may be rewarded by the survival and restoration to health of patients who a few years ago would almost certainly have died of hæmorrhage.

CASE 1—A man of 42 who had been in the army had lived in Hong Kong had had intermittent attacks of obstructive jaundice for four months, sometimes accompanied by pain. The jaundice caused a trying pruritus. He had some indigestion. He had similar symptoms in 1928 and an operation in a hospital had relieved them. Details were not available but he was said to have had a cyst in the region of the pancreas. On examination he was moderately jaundiced, the urine contained bile and the stools were clay-coloured. There was a right upper paramedian scar and a large cystic swelling apparently attached to the right lobe of the liver and moving with it. It extended down to the umbilicus, it was not tender. Radionuclide showed areas of calcification at the periphery of a spherical tumour. Casoni and hydatid complement fixation tests were negative. The Wassermann reaction was negative.

The alternative diagnoses appeared to be hydatid cyst of the liver or pancreatic cyst. When first, three months earlier, operation was not advised, attacks of jaundice, however, had increased in frequency and severity and irritation was intolerable. A laparotomy was performed by Sir Alfred Webb Johnson through a midline incision above the umbilicus. The cyst was found to be pancreatic in origin, the common bile duct, duodenum and some very large veins were stretched over it and dilated. It was impossible to remove the cyst and it was therefore marsupialised. The fluid in the cyst was clear and contained diastase, lipase, tryptase, urea and chlorides. About nine days after operation he began to complain of epigastric pain and anorexia and the upper abdomen became very distended and tympanic, the pain became very severe. It

supposed that this was due to obstruction of the duodenum by the massed-up cyst and this supposition was confirmed by radiography after a small barium meal after a few days the symptoms improved but it was noted that he looked very pale and on the fourteenth day after operation he had a very large hæmatæmia followed by a large stool consisting mostly of changed blood.

The hæmoglobin percentage was estimated as 30, the patient's blood-group was 4 (Moss), the blood pressure as 85 systolic 60 diastolic. A continuous-drip blood transfusion was started. Bleeding continued for 11 days there were several hæmatæmias, but the main blood loss was by the bowel. The source of bleeding was presumed to be varices in the duodenum caused by prolonged partial obstruction of the veins stretched over the cyst. The uncertainty of the cause and site of the hæmorrhage put operation out of the question. For the first two days water only was given by mouth and saline given by rectum. After rectal alimentation was very unsatisfactory, because of the frequent large mælena stools, and as bleeding showed no sign of abating Moulengracht's diet was started. Injections of Hemoplastin and calcium gluconate were given from time to time. 11 litres of blood were given by continuous-drip blood transfusion within ten days. Some thrombophlebitis occurred and the cannula was changed into a different vein eight times, with an interval of a few hours on three occasions the longest interval being 2½ hours. During these intervals the hæmoglobin percentage of the blood fell rapidly, massive hæmelenæ continued and the transfusion had to be resumed. It was our deliberate policy not to raise the hæmoglobin percentage above 50 as long as bleeding was still going on. On the eleventh day there was no more mælena, the hæmoglobin was raised to 60 per cent and the transfusion was stopped. The hæmoglobin remained at 60 per cent for 24 hours and a further 1·42 litres of blood raised it to 65 per cent. The total quantity of blood transfused in 11 days was 13·12 litres; we think this must be a record of quantity in the time. There was no more bleeding and hæmorrhage thereafter was rapid. The discharge from the wound lessened after several injections into it of 1 in 4000 silver nitrate and 14 weeks after operation the sinus was healed and the patient a fit man. During the transfusion occasional pyrexia and thrombophlebitis were the only untoward events. Invariably while the transfusion was proceeding the patient expressed himself as feeling fine but during the intervals when the hæmoglobin was at a low level he felt very weak and ill. The blood was obtained from 24 donors; they were of Group 4 and their blood was also tested for incompatibility directly with the patient's serum. The blood of two donors were from the Red Cross Society's Transfusion Service because the blood was required urgently in the middle of the night. All the other donors were men who worked at the factory where the patient was employed. Eighty-six men were grouped in batches of sixteen or more at a time. The men and their employers were very anxious and willing to help and many of those who were found to be unsuitable were most disappointed.

CASE 2.—A man aged 35 who had had a gastro-duodenal ulcer for six years previously. He had for the last six months he had had pain after food and apparently there had been loss of weight. He was admitted with signs and symptoms of internal hæmorrhage though hæmatæmia or mælena had yet occurred. On admission: hæmoglobin, 30 per cent blood pressure 100/70; pulse rate 120. Transfusion was commenced within 1½ hours of admission and 0·8 litres of blood were given by the continuous-drip method over a period of 1½ hours with an interval of 9½ hours. When it was found that hæmorrhage was still continuing rapidly the hæmoglobin percentage was raised to 50 and laparotomy was performed 28 hours after the commencement of the transfusion. A large spurting artery of the transverse colon was found in the base of an anastomotic ulcer and was ligatured and the opening sutured. The transfusion was continued during and after operation until the hæmoglobin percentage was 70. Good recovery.

It is sometimes objected that such large quantities of blood as these are rarely obtainable. It is note

worthy that of the 37 donors bled for these two cases only four were Red Cross Society's donors. A patient's workmates are often a willing and valuable source of blood and in other cases if the onus of responsibility for finding donors is firmly put upon the relatives, sufficient blood is usually obtainable.

I wish to thank Sir Alfred Webb-Johnson and Mr E. W. Riches for permission to publish these cases and Dr F. Knights, who performed the transfusions.

REFERENCES

- Marriott, H. L. and Kekwick, A. (1935) *Lancet* i 97 and 278.
— (1936) *Proc. R. Soc. Med.* 29 337.

CYSTICERCOSIS AS A CAUSE OF EPILEPSY IN A DIABETIC INDIAN

By R. L. HAYLAND MINCHIN, M.D. Edin. I.M.S.

PHYSICIAN TO THE GOVERNMENT GENERAL HOSPITAL,
AND ADDITIONAL PROFESSOR OF MEDICINE,
MEDICAL COLLEGE, MADRAS

No case of cysticercosis giving rise to fits in an Indian has yet been described though MacArthur (1933) has reported 22 such cases in British soldiers returning home after service in India. It is probable though of course not proved that these cases were infected with cysticerci derived from their own worm. Recent work on the development of the cysticercus stage of *Tænia saginata* (Penfold, Penfold, and Philips 1936) shows that in cattle, its normal host this cyst never lives more than nine months and then stays only in the muscles and never enters the central nervous system of the infected animal. Research is certainly required to show whether the *Cysticercus bovis* develops and dies with such regularity in other hosts and to calculate the duration of *Cysticercus cellulosa* in the infected pig and less normal hosts.

In July 1936 I saw the Hindu patient described below and requested that he should be transferred to my wards in the Government General Hospital Madras from the Mental Hospital, as the case appeared to be a combination of diabetes mellitus and idiopathic epilepsy two diseases which an extensive search in the published reports has failed to reveal as occurring simultaneously and which Joslin (1928) has been unable to discover among the 6000 hyperglycæmias he investigated. Further the combination of these two conditions would disprove the hypothesis I have advanced (Minchin 1933) that idiopathic epilepsy is associated with hyperfunction of the islets of Langerhans, and would also show that the beneficial results reported from dietetic measures to control epileptic hypoglycæmias by Thomas (1936) and the results of partial pancreatectomy described by Seale Harris (1933) and others were due to some other cause than the consequent rise of the blood sugar level.

CASE HISTORY

The patient belonged to a non-vegetarian caste and had been admitted to the Mental Hospital in November 1935. He was mentally confused and would give very little account of himself. No relations or friends could be traced to give any particulars of the onset of his disease or any previous medical history.

During the time he was in the Mental Hospital no improvement took place in his mental condition and periodic typical major epileptic fits occurred there being 6 in January 5 in February none in March, 1 in April, none in June and 2 in July. There was no prodromal

signs or symptoms of the fits During this period the physical condition deteriorated In June, 1936, a glucose tolerance curve was obtained which gave the following figures —

Fasting blood-sugar	$\frac{1}{2}$ hr	1 hr	$1\frac{1}{2}$ hr	2 hr
308 mg per 100 c cm	360	364	444	400

Sugar was present in the urine throughout the examination On July 20th the opportunity arose of taking a specimen of blood immediately after a fit and this was found to contain 500 mg per 100 c cm of glucose For the reasons mentioned above he was transferred to the General Hospital On admission he was found to be very emaciated, there was considerable mental confusion and he was unable to give any account of himself

Examination—The abdominal reflex was active on both sides plantar reflexes could not be obtained the deep reflexes were absent, the pupils reacted to light and accommodation

Pulse rate 80 no irregularities, heart, normal dimensions sounds clear and closed, blood pressure 115 mm Hg systolic, 80 diastolic There was advanced pulmonary tuberculosis in both lungs

Laboratory reports—Urine contained 9 per cent sugar but no ketone bodies Blood showed secondary anaemia but no eosinophilia Wassermann and Kahn tests negative Stools no ova, amœba, or cysts detected Glucose tolerance curve taken on August 3rd —

Fasting	$\frac{1}{2}$ hr	1 hr	$1\frac{1}{2}$ hr	2 hr
267 mg per 100 c cm	333	340	440	440

Sugar was present in the urine throughout the test Electrocardiogram showed a slightly increased size of the P wave but no other abnormalities Cerebro spinal fluid Wassermann negative

From these examinations the possibility of the fits being due to syphilitic infection was ruled out and it was considered that the condition might be due to a cysticercal infection of the brain The whole of the body was carefully examined for the presence of palpable cysts but none were discovered

On August 11th the skull was X rayed No calcified cysticercal cysts were demonstrated in spite of four examinations, the only abnormality detected



FIG 1—Cysts seen in the left (on the left) and right cerebral hemispheres

being a shallowness of the pituitary fossa Similar X ray examinations of the thorax and abdomen failed to show any calcified cysts Unfortunately the limbs were not submitted to X ray examination

The patient remained in hospital and up to the end of September his condition improved mentally and physically under strict dietetic measures and administration of small doses of insulin so much so that he was able to take a fairly intelligent interest in his surroundings and gained 10 lb in weight In the first week of October he started to run a high temperature and signs of more tubercular activity appeared in his chest and the percentage of sugar in the urine increased in spite of insulin injections He died on Oct 20th

Post mortem report—Chronic ulcerative phthisis left lung and tuberculous broncho pneumonia of right lung with thickened pleura on both sides Impervious splenoidal air sinus In the pancreas the islets of



FIG 2—Photomicrograph of scolex from cysticercus in pars basalis showing double row of hooklets

Langerhans were few and far between and those that were seen were small and atrophic Alimentary canal normal, no tapeworm present

Brain—Weight 2 lb 4 oz, rather small in size An opalescent slightly milky fluid spurted out from the left temporal lobe during the removal of the brain from the cranial cavity A cyst of the size of a small pea with a milk spot was seen in the right anterior central sulcus about 1 in above the point of division of the stem of the Sylvian fissure A whitish nodule of the size of a large pea projecting on the surface of the pars basilaris of the left side (Fig 1, right) Above this the cortex of the posterior ends of the middle frontal gyri was softened The left temporal pole was soft, cystic, and collapsed The gyrus rectus and the medial orbital gyrus of the left frontal lobe appeared to be softened On making antero-posterior vertical sections through the left half of the brain (1) There was a cavity of the size of a walnut in the anterior part of the temporal lobe, its wall was very thin below and had clearly been torn during removal of the brain (Fig 1, left) (2) A cavity about 1 in long, $\frac{1}{2}$ in broad, and $\frac{1}{2}$ in deep was present $\frac{1}{2}$ in above the medial orbital gyrus and gyrus rectus, the wall being ragged (3) An almost circular cavity $\frac{1}{2}$ in in diameter outlined by a capsule was seen in the pars basilaris containing a cysticercus which showed under the microscope a scolex with a double row of hooklets (Fig 2)

DISCUSSION

From the pathological report it seems that the cause of this patient's epileptic fits was a cerebral infection with the cysticercus of *Taenia solium*. It is unfortunately impossible to state the duration of the infection, but we are justified in assuming that it is over 12 months since fits have been present for this period Sections of the cysticercus removed from the frontal lobe show no sign of degeneration and it is reasonable to assume that these were living before being placed in fixing material MacArthur was unable to give any idea of the duration of the infection in his cases In one patient the fits came on during treatment for tapeworm, while in another fits first started four years after removal of a worm

It is interesting to note that in his cases as in the one described, no calcification of the cysticerci was found in the brain, and in the other specimens in the Madras Medical College museum where a brain infestation is present no calcification has taken place Morrison (1934) has described the only case where

calcification of cysts in the brain associated with epileptic convulsions has been found.

SUMMARY

A case is described of epilepsy in a diabetic Indian due to infestation of the brain with *Cysticercus cellulosus*. This is the first noted in an Indian though there have been cases reported in British soldiers. There is a need for research on the life history of this cysticercus cellulosus. The importance of finding some definite cause for epileptic fits in hyperglycemia is demonstrated.

My thanks are due to Dr. H. S. Hensman for allowing me to investigate this case, to Dr. A. Vasudevan for pathological reports, and to Captain L. W. Barnard for the photographs.

REFERENCES

- Harris S. (1933) *J. Amer. med. Ass.* 100, 321.
 Joslin E. P. (1928) *Diabetes Mellitus*. Philadelphia.
 MacArthur W. P. (1933) *Trans. R. Soc. Trop. Med. Hyg.* 26, 533.
 Mischin R. L. H. (1933) *J. med. Sci.* 79, 889.
 Morrison W. K. (1931) *Brit. med. J.* 1, 13.
 Penfold, W. G., Penfold, H. D., and Phillips, M. (1930) *Med. J.*
and 1, 417 (quoted *Lancet* 1930, 2, 152).
 Thomas C. R. (1936) *J. Tenn. med. Ass.* 29, 51.

ACUTE PAROTITIS AS A MANIFESTATION OF LATENT URÆMIA

By REGINALD T. PAYNE, M.S., M.D. Lond.
F.R.C.S. Eng.

CASUALTY SURGEON TO ST BARTHOLOMEW'S HOSPITAL

It does not appear to be generally recognised that in certain circumstances acute parotitis may be an indirect or even early manifestation of unsuspected uræmia. That this is actually the case has been brought home to me in many instances during the past few years. This type of parotitis is only likely to arise in patients who are already ill from some other disease—particularly in conditions in which latent uræmia may occur—such as gastric hæmorrhage, acute infections, insanity, and in the post-operative state. The uræmia therefore may or may not be of extra renal type and in addition is a type which is not accompanied by œdema. The association between established uræmia and acute parotitis is well known but I do not believe it is recognised that the parotitis may at times be the first sign of a latent uræmia or even that the parotitis coming on after gastric hæmorrhage &c. may have a uræmic background.

Ætiology

In such uræmic states ideal conditions are present in the mouth for the development of an ascending parotitis. The mouth is dry as the result of the suppression of almost all salivary secretion and the tongue and lips are either parched or thickly furled. The bacterial content of the mouth is much increased and it has been demonstrated by Seifert (1926) that this is especially true of the *Staphylococcus aureus* at least in the post-operative type. Bacteriologically this type of acute parotitis is almost always due to *S. aureus*. From the pathological point of view the process is best conceived as a diffuse carbuncular infection of the gland extending along the ramifications of the ducts. This carbuncular nature is well demonstrated in post-mortem specimens.

The prognosis of acute parotitis in these uræmic patients is not good. The presence of some antecedent serious disease and the existence of some

degree or other of uræmia make the outcome uncertain. As regards acute staphylococcal parotitis itself this is always a serious disease owing to the anatomical configuration of the gland and its dense capsule. The recent work of Christiansen (1935) on uræmia as the cause of death after massive gastric hæmorrhage has a bearing on this subject. He has shown that latent uræmia is often the cause of death after hæmorrhage from peptic ulceration. The high incidence of parotitis in this disease which was recorded by Rolleston and Oliver in 1909 suggests at least that the parotitis has a uræmic basis. The factor of buccal infection is obviously an important one leading to acute parotitis and this is brought about largely through the absence of chewing. The latent uræmia that is present in many of these patients leads to considerable suppression of salivary secretion. It is the combination of exaltation of the buccal flora especially the staphylococci, together with absence of parotid secretion that leads to the development of ascending parotitis. The condition is comparable to the development of ascending pyelonephritis after prostatectomy. Rolleston and Oliver say: "None attached more importance to antecedent hæmatemesis than to oral starvation as a factor in the causation of this form of parotitis." This would fit in with the present conception of the sequence of events—namely hæmatemesis, uræmia, parotitis.

Treatment

Acute parotitis as an early sign of latent or developing uræmia is especially likely when the patient already has some antecedent serious disease. I have so often made a diagnosis of uræmia in unsuspected cases on the grounds that the patient had an acute parotitis associated with some other disease that I cannot believe that parotitis is often considered as possibly the first manifestation of uræmia. Treatment of these cases is not considered here in detail, but the parotitis must always be taken extremely seriously since it may well prove a factor bringing about a fatal outcome. If resolution of the condition cannot be brought about very rapidly by conservative measures there should be no hesitation in exposing the gland freely by the usual curved incision and making a series of transverse incisions into the fascia and the gland itself. The absence of any gross collection of pus should not disconcert the surgeon. Pus will probably pour from the wound within 24 hours of operation. In the post-mortem examples of acute parotitis to which I have referred there was no gross collection of pus but the whole duct system of the gland was in a state of purulent infiltration and the gland itself was about six times normal size. In acute parotitis death may occur long before there is any attempt at localisation of an abscess in the gland. Finally recognition of the parotitis as a possible manifestation of uræmia may lead to adequate treatment of the latter.

REFERENCES

- Christiansen T. (1935) *Hospitalsdødsfald* 78, 81.
 Seifert E. (1926) *Lancet* 2, 152.
 Rolleston H. D. and Oliver M. W. H. (1909) *Brit. med. J.* 1, 1200.

CENTRAL LONDON OPHTHALMIC HOSPITAL.—The Zunt Fund in accordance with the plan described in our issue of March 20th (p. 730) has allocated £8000 to this hospital. The year's surplus has been used to defray part of the capital expenditure on improvements. The hospital is now affiliated to the Mid Essex Hospital where nurses will complete their training.

CLINICAL AND LABORATORY NOTES

TUBERCULOUS VULVOVAGINITIS

REPORT OF A CASE IN INFANCY

By VALENTINE A J SWAIN, M.R.C.S. Eng

LATE HOUSE SURGEON HOSPITAL FOR SICK CHILDREN,
GREAT ORMOND STREET LONDON

TUBERCULOSIS of the vulva and vagina is the rarest form of clinical genital tuberculosis, and according to Norris (1928) occurs in about 2 per cent of all tuberculous lesions of the genital tract. Clifford White (1917) states that a quarter of the cases of this disease occur in children, adults are commonly affected at the ages of 30-40. The following report of this disease in an infant shows some interesting features.

CASE REPORT

A female infant, aged 17 months, was admitted to hospital on account of having difficulty in passing water. It was first noticed about two weeks before admission that she cried during micturition and seemed to pass little urine at a time. One week later it was noticed that the vulval region was swollen and sensitive to touch.

Past history—A full term baby, only child, birth weight 6½ lb., breast-fed till 8½ months old.

Family history—It was ascertained that there was a strong family history of pulmonary tuberculosis on the father's side. Later it was found that both parents had active tuberculosis; the mother has since died of phthisis.

On examination she was a pale, ill looking child, and under weight (19 lb.). Examination revealed an oedematous and inflamed vulva, there was an ulcerated area on the left postero lateral aspect of the vaginal orifice, this was very tender. The inguinal glands on both sides were palpably enlarged, but not tender nor fluctuant. Apart from a few small glands enlarged in the neck, the child appeared otherwise quite normal.

The urine on admission was sterile. A vaginal smear showed some pus cells and mixed organisms, no gonococci were seen. One week after admission the inguinal glands became swollen and fluctuating. They were aspirated and a few c.cm. of thick blood stained pus was withdrawn, this contained a few Gram positive cocci. A Ziehl-Neelsen film showed many tubercle bacilli, on culture only coliform bacilli were grown. The glands were later aspirated again on several occasions as they refilled. Animal inoculation of the pus produced a tuberculous reaction.

Five weeks after admission the child was examined under an anaesthetic. The inguinal glands were incised and everted. There was an ulcerated area in the region of the left posterolateral aspect of the vulvo vaginal orifice, the right side was slightly involved. The edges were irregular unindurated, and definitely undermined. The base was irregular in depth and on its surface was bleeding granulation tissue. It extended for about 1 in. into the vagina. There was no evidence of any sinus. The cervix uteri appeared healthy and normal. Rectal examination revealed no abnormality in the pelvis. A section of the ulcer margin was excised for biopsy. Dr D. N. Nabarro reported that the section showed well formed giant cells and systems surrounded by lymphocytes, there was widespread endothelial cell proliferation. Staining in a Ziehl-Neelsen film showed scanty tubercle bacilli to be present.

It was thought that there might have been a focus in the urinary tract, primary to that on the vulva. The bladder was cystoscoped by Mr T. Twistington Higgins; there was some urethritis, the bladder neck was some what reddened and congested, both ureteric orifices appeared normal functioning with a clear efflux. It was thought inadvisable to catheterise the ureters in view of the negative findings and the risk of spreading infection. Uroselectan films appeared normal. The urine was

examined from time to time and no tubercle bacilli were found. Other investigations showed Mantoux test, 1/10 000, was positive, Frei's test for lymphogranuloma inguinale was negative. Blood count, white cells 17,500 per c.mm., red cells 3,820,000 per c.mm., haemoglobin 55 per cent, colour index 0.7. A radiogram of the chest revealed a calcareous node at the right hilum.

Treatment—The local condition was treated with X-ray irradiations and soothing applications. In addition, general ultra violet ray therapy was given, as well as general tonics of iron and cod liver oil.

Progress—The child developed subsequently bilateral otitis media following measles, it was a streptococcal infection, she later developed mastoiditis, which necessitated a mastoidectomy, this was followed by suppurative adenitis in the neck. The patient is now having treatment at a sanatorium where she is making very slow but favourable progress in both her local and general condition.

COMMENTARY

Jameson (1935) in a monograph describes this condition fully in its many aspects with adequate references to other reports. The lesion on the vulva usually occurs in people with tuberculosis in other parts of the body. Primary lesions, however, have been reported, but they are very rare, for negative clinical evidence of other tuberculous foci is insufficient grounds for regarding a case as being primary in origin, and many cases post mortem will reveal microscopic evidence of tuberculosis at other sites.

The mode of infection of the lower genital tract in every case is difficult to ascertain. The vulva and vagina may become infected secondarily from above from lesions in the upper genital or urinary tract. Descending spread may also occur from other sites by means of the blood or lymphatic stream. Direct inoculation of the genitalia can occur by contamination with the hands of a phthisical subject, as in a baby requiring frequent attention to its toilet. In adults, the condition can have a venereal origin, but this is uncommon.

In the case described the upper genital urinary tract appeared clinically free from tuberculosis, while the lungs showed evidence of past infection, in that a calcified gland is present in the hilar region. This is not surprising as the child's parents both had active pulmonary tuberculosis and that she was breast fed until 8½ months old. The pulmonary lesion is probably of earlier origin than that of the vulva, and the latter may have become secondarily infected with dissemination of the disease. Alternatively, it is possible that the vulva may have become directly contaminated by the parents during attention to the baby's toilet. For it has been shown by Jameson (1935) at the Stryker Laboratory in New York that the introduction of a strain of tubercle bacilli into the vagina of an animal (guinea pig) can produce tuberculous lesions in the lower genital tract. This is greatly enhanced if the animals are first sensitised by a previous inoculation with a strain of tubercle bacilli. Trauma, also, increases the liability to develop these lesions. Jameson generalises by analogy that "even in humans tuberculosis of the vagina and vulva may be of the ascending type much more frequently than is suspected at the present time," and that "upper tract lesions are usually descending infections." He gives further clinical and pathological evidence to substantiate this statement.

Tuberculosis of this region occurs either in an ulcerative or hypertrophic form, the former is the

commoner. The ulcers may be single or multiple and may vary in character forming confluent ulcerated areas or sinuses. The inguinal glands are involved late as a rule. Dysuria pruritus and swelling of the vulva with some discharge are the commonest symptoms. On examination other tuberculous lesions may be found elsewhere. Diagnosis may be difficult for typical tuberculous giant-celled systems are often scanty in the histological sections and the Koch's bacilli may be few.

I am indebted to Mr T Twistington Higgins for his interest and permission to publish the report of this case which was under his care at the Hospital for Sick Children, Great Ormond-street; also to the pathology department for the various investigations and to Mr D Martin for the photograph.

REFERENCES

- Jameson E M (1935) *Gynaecological and Obstetrical Tuberculosis*. London pp 53-59.
 Ibid, p 43 et seq.
 Norris, G. O (1928) Quoted by Jameson
 White, G. (1917) *New System of Gynaecology* vol 1 p 695

BILATERAL CYSTIC SWELLINGS OF THE THIGHS OF TUBERCULOUS ORIGIN

By E A DEVENISH M.S. Lond. F.R.C.S. Eng

ASSISTANT TO THE SURGICAL UNIT UNIVERSITY COLLEGE HOSPITAL

A PAINTER, aged 18 was admitted to hospital on June 19th, 1936 complaining of a lump in the upper part of the left thigh.

Eight years before admission he had fractured the left femur in its middle third and about six months after this he noticed the swelling in his left thigh. The lump had gradually got larger and for the last two years he had pain in the region of the lump. The pain was gnawing and was worse at night and on lying down. It was not brought on by walking but running produced some pain. He had never been ill before did not suffer from night sweats and had no history of familial tuberculosis.

He was a well-covered stocky youth and on standing naked the bulging of the upper

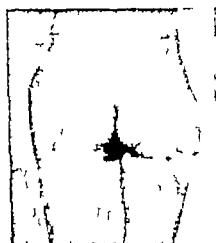


FIG 1.—Photograph taken after excision of left cyst. The discoloration of the skin is due to disease.

normal outline of the thigh by about 4 in. The overlying skin was not attached to the mass and was normal in all respects.

Right thigh.—There was a similar swelling in the corresponding situation in the right thigh. This extended well into the buttock, deep to the gluteus maximus, and fluctuation was demonstrable between the swelling of the thigh and of the buttock. The patient had not noticed the swelling of the right thigh.

Hip-joints.—There was considerable limitation of internal rotation of both joints with slight limitation of flexion and abduction of the left joint. The lower limbs were equal in length. No abnormality was discovered on examination of the spine or of the rectum and fluctuation could not be obtained between the swelling of one thigh and that of the other.

Radio-grams of the hip joints and femora showed no abnormality beyond a small oval area of rarefaction in the left great trochanter (Fig 2). A radiogram

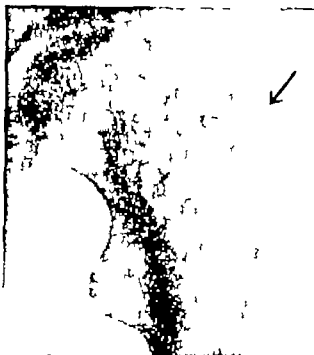


FIG 2.—Radiogram of left great trochanter showing area of rarefaction.

of the chest showed evidence of previous tuberculosis in the form of densely calcified glands at both hila and dense shadows in the upper third of the right lung field. There was no evidence of present activity.

Operations.—The swelling of the left thigh was aspirated and thick opaque yellow fluid containing cholesterol crystals and a few polymorphs and lymphocytes was obtained. It was sterile on culture and did not contain tubercle bacilli as was shown by a negative guinea pig inoculation with this fluid. On July 6th the left thigh was explored and a large cyst adherent to the surrounding structures situated deep to the deep fascia of the thigh and extending backwards deep to the anterior border of the gluteus maximus was dissected out. The main cyst communicated by a narrow neck with a small abscess cavity in the great trochanter. This abscess cavity was lined by smooth sclerosed bone and was filled with granulation tissue. Cultures from the cyst fluid and from the granulation tissue were sterile. The wound healed by first intention. On July 30th the right thigh and buttock were explored. An exactly similar cyst was found situated deep to the gluteus maximus and extending anteriorly between the tensor fasciae femoris and the vastus lateralis. Deep to the insertion of the gluteus medius was a separate small abscess cavity lined with granulations and lying over an area of bare bone about 1 in in diameter. No connexion of the cyst cavity with the hip-joint was demonstrable in either thigh. A portion of the cyst wall excised from the right thigh was injected into a guinea pig which 6 weeks later had developed miliary tuberculosis.

Morbidity histology.—The tissue excised consisted of the cyst walls and the granulation tissue everted from the cavity in the left great trochanter. The cysts were identical in appearance both to the naked eye and on microscopic examination. Each consisted of a tough, fibrous wall about 1 in thick, lined on its inner surface by yellow caseous material which when washed away revealed a granular surface like that of morocco leather. The outer surface of the cysts was adherent to the surrounding structures and had been separated from them by sharp dissection.

On microscopic examination the granulations from the abscess cavity in the bone were typical tuberculous granulations. No bone trabeculae were present. The wall of each cyst was composed of three layers (Fig 3): (1) An outer layer of adult fibrous tissue adherent to the surrounding structures. (2) A middle layer of

tuberculous granulation tissue (3) An inner layer of caseous material. An unsuccessful search was made for tubercle bacilli in the sections cut, but the nature of the



FIG 3—Microphotograph of whole thickness of cyst wall ($\times 8$)

lesion was proved by the positive guinea pig inoculation with material from the wall of the cyst.

The cystic swellings in the thighs were almost certainly chronic abscess cavities arising from comparatively small bone lesions. The unusual feature was the symmetry of the swellings which on first sight gave the patient the appearance of having some femoral deformity. This symmetry is explicable on the supposition that the disease began in the great trochanters if, as is probable, the initial bone lesions were embolic in origin. This probability is supported by the presence in the right lung of evidence of an old tuberculous lesion from which the emboli could have arisen.

The case belongs to that class of tuberculous lesions in which a small bony focus is associated with a large abscess in the surrounding soft parts, the commonest example being caries of the spine, in which a small lesion in one of the vertebral bodies is associated with a large psoas abscess.

CASE OF STREPTOCOCCAL MENINGITIS TREATED WITH PRONTOSIL

By I VITFANSON, M R C S Eng

AURAL SURGEON TO EAST HAM MEMORIAL HOSPITAL AND

G KONSTAM, M D, M R C P Lond

PHYSICIAN TO EAST HAM MEMORIAL HOSPITAL, ASSISTANT
PHYSICIAN TO WEST LONDON HOSPITAL

In a leading article in *THE LANCET* (1936) and in an annotation (1937) the importance of trying Prontosil or its derivative *p* aminobenzenesulphonamide in severe forms of streptococcal infection was urged. This has prompted us to publish the following case of hæmolytic streptococcal meningitis complicating acute otitis media, which was treated with prontosil in addition to orthodox surgical measures.

Although it is fully realised that no inferences can be drawn from an isolated case, the favourable result

might encourage others to test this chemotherapeutic agent under similar circumstances. Available statistics bear witness to the heavy mortality in those cases of otitic meningitis in which the cerebro spinal fluid is infected with organisms, particularly where they are sufficiently numerous to be seen in films from the centrifuged fluid. Jory (1935) in 39 cases at St Bartholomew's Hospital of meningitis complicating acute and chronic otitis media reported 11 in which the cerebro spinal fluid contained hæmolytic and non hæmolytic streptococci, 9 of these patients died and 2 recovered. Gangl and Zange (1935) collected 70 such cases, 16 of which contained hæmolytic and non hæmolytic streptococci in the cerebro spinal fluid, 13 of these died and 3 recovered. Neumann (1934) in 59 cases found streptococci in the cerebro spinal fluid in 16 instances, the proportion of deaths to recoveries was as in the previous series 13 to 3.

A boy aged 10½ was admitted to the East Ham Memorial Hospital on Nov. 13th, 1936, with a left-sided otitis media of three weeks' standing. For nine days he had suffered from mucopurulent otorrhœa without pain or tenderness over the mastoid, the temperature did not rise above 99.2° F except on two occasions when it was 100°. On the tenth day he suddenly developed a temperature of 104.6°, without however any exacerbation of his aural symptoms. A left Schwartze operation was performed by one of us (I V) and an extensive osteitis of the mastoid process with pus and granulations in many cells was found. The lateral sinus was not exposed and the lamina of bone covering it was apparently normal, the tegmen antri was removed over an area 6 mm by 5 mm and there was no evidence of extradural abscess, the cells in Trautmann's triangle as well as those in the apex of the mastoid process were cleared out and the operation was completed.

Seven days later the temperature became normal and the wound was healing satisfactorily, the aural discharge having ceased.

On the twelfth day after operation he woke up with severe generalised headache, photophobia, vomiting and a temperature of 104.1°. Kernig's sign with slight neck rigidity was present and the ophthalmic disc margins were blurred. At lumbar puncture the cerebro spinal fluid was under pressure and contained 3600 cells of which the large majority were pus cells. Cocci were seen in films and on culture they proved to be hæmolytic streptococci. The protein content of the cerebro spinal fluid was 80 mg per 100 c cm.

On the same evening the mastoid wound was reopened and Neumann's operation for meningitis was performed, the posterior meatal wall was removed and the middle fossa dura was widely exposed by the removal of the tegmen tympani and antri and that part of the mastoid bone in contact with the dura. The lateral sinus and the posterior cerebellar dura were uncovered and finally the superior angle of the petrous bone was removed. At the termination of the operation the dura from both fossæ was seen to be tense and although it bulged into the mastoid cavity it was not incised.

Nowhere was there macroscopic evidence of disease of the meninges or extension of the osteitis. During the following twenty-four hours he was delirious and by the evening he had sunk into a deep coma. Lumbar puncture was performed and 25 c cm of cerebro spinal fluid which was under increased pressure were drawn, this was followed by general improvement. Three days later a right external rectus paresis appeared but there was no evidence of involvement of the other ear, and the diplopia disappeared two weeks later. The papilloedema at first increased and remained for four weeks after operation despite an amelioration of the symptoms. Convalescence was interrupted by six days of continuous pyrexia and the temperature became normal twenty days after the second operation. Progress was thenceforward uneventful.

Post operative treatment consisted in daily lumbar puncture for thirteen days and the administration of

prontosil 10 c.m. parenterally b.d. and 2 prontosil album tablets orally b.d. The cerebro-spinal fluid became sterile on the seventh day and the cells which at first had numbered 3000 per c.mm. fell to 35 per c.mm. thirteen days after the operation.

Although prompt operation will save a proportion of such cases the moribund condition of our patient

the day after operation led one to expect a fatal issue.

REFERENCES

- Gangl, O. and Zange J. (1935) *Beitr. Hals. Nas. u. Ohrenheilk.*
 Jory N. (1935) *Proc. R. Soc. Med.* 28 532
Lancet (1936) 2 1339
 — (1937) 1, 311
 Neumann, H. (1934) *Rev. Laryng. Paris* 55 1

MEDICAL SOCIETIES

ROYAL MEDICO-CHIRURGICAL SOCIETY OF GLASGOW

A MEETING of this society was held on March 19th. with Mr GEORGE H. EDINGTON the president in the chair. He showed a case in which the radial nerve was operated on two years ago for

Traumatic (Fracture) Paralysis

A schoolboy aged 14 was admitted to the Western Infirmary on Jan. 23rd 1935 with fracture in the middle of the shaft of the right humerus having been knocked down by a motor-car a few hours previously. Examination on the following day showed marked musculo-spiral paralysis. The fracture united and the boy was discharged in a splint. Two months later the paralysis had not improved and on March 28th the radial nerve was exposed through a lateral incision and found nipped between the fragments of the bone. The nerve was divided and freed above and below the fracture and through a medial incision the proximal part was displaced to the front of the arm (as recommended by Stiles) and sutured to the distal part under cover of brachialis anticus. Recovery of power was very slow and when the patient was seen towards the end of July 1935 there was little if any change. Electrical testing of muscles involved showed no response to faradism and a weak response to galvanic current. When seen early in October 1936 he had fair use of hand and arm. The limb was much thinner than its fellow. Paralysis of extensor ossis metacarpi and of primi intermedii pollicis was noted. By mid-February 1937 power was greater; the boy was able to play ping pong but was doubtful of trying tennis. If he tried manipulating a heavy object he felt a strain at the wrist. Thumb paralysis persisted and extension of metacarpal-phalangeal joint of index was not so complete as in the left hand. Numbness was present down the radial side of second metacarpal and index and more slightly on adjacent side of thumb and first metacarpal.

The points illustrated by the case were (1) the diagnosis of the precise cause of paralysis was not made out before operation (2) the slow recovery of power (3) the persistence at present date of implication of deep extensors.

Mr ALEXANDER MILLER discussed

Lesions of the Hip and their Treatment

showing lantern slides illustrating the primary and secondary deformities encountered from lesions in this region. He said that diagnosis was only established in doubtful or early cases by careful observation and follow up. The classification adopted was: (a) toxic arthritis (b) tuberculous disease (c) infective arthritis (non tuberculous) (d) pseudo coxalgia (e) traumatic (f) flail hip. The term toxic arthritis was reserved for cases manifesting the hip joint syndrome which cleared up completely following rest and extension. In treatment the

relative values of manipulation extra and intra articular arthrodesis and osteotomy were considered. Mr G. T. MOWAT spoke on

Rapid Histology in Diagnosis

He discussed cases in which errors of diagnosis as to malignancy had been made at the time of operation; in some cases radical procedure had been carried out and subsequently proved to be unnecessary in others malignant tissue had been cut into and an interval had been allowed to elapse while a paraffin section was being made before adequate treatment was carried out. The results obtained in the Glasgow Royal Cancer Hospital from a system of quick histology were described. In most cases definite information was given and in others an intelligent lead was given to the surgeon. Routine paraffin sections were made afterwards and in no case had the diagnosis as to malignancy to be revised. The system was found most useful in doubtful breast cases but was also used in the gastro-intestinal tract and the oropharynx. In suspected carcinoma of the body of the uterus curettage scrapings were successfully used for diagnosis. Methods used were particularly (1) the frozen section (2) Dudgeon and Patrick method and (3) the Ultropak illuminator. The average time taken for diagnosis was five minutes. The results left little doubt of the general efficiency of the methods or of the practical help given to the surgeon.

Basal Metabolism in Hyperthyroidism

Dr A. B. ANDERSON discussed the relationship of the basal metabolism rate (B.M.R.) to the clinical signs of hyperthyroidism. In a series of 140 cases of varied ages and both sexes which were clinically hyperthyroid or suspected of hyperthyroidism the B.M.R. was estimated and compared with the occurrence of clinical signs: enlargement of the thyroid, exophthalmos, tremor, tachycardia, sweating and loss of weight. The tentative conclusions reached were that when enlargement of the thyroid is accompanied by exophthalmos and any other of the clinical signs the B.M.R. will be high in nearly all cases. When enlargement of the thyroid is not accompanied by exophthalmos but all the other signs are present the B.M.R. will be high in nearly all cases but when only two or three signs are present the B.M.R. will be normal in a number of cases. When enlargement of the thyroid is present alone or with only one other sign the B.M.R. will be normal. In tachycardia without enlargement of the thyroid the B.M.R. will be normal in nearly all cases.

WATERLOO HOSPITAL FOR CHILDREN.—At the annual meeting of governors of this hospital it was stated that if a traffic roundabout was made at the junction of Waterloo-road Stamford-street and York-road part or the whole of the hospital site would have to be used. The hospital has a surplus on the year's workings of over £5000 mainly owing to an increase in legacies.

REVIEWS AND NOTICES OF BOOKS

Ions in Solution

By R W GURNEY, M A, Ph D, Research Associate in the University of Bristol London
Cambridge University Press 1936 Pp 203
10s 6d

THE development of the quantum mechanical theory of the atom has led to important work on the nature and reactions of ions in solution Dr Gurney summarises, in condensed yet intelligible form, the fruits of this work If the book gives an impression of being largely speculative, it must be remembered that the approach is comparatively new and that experimental research directly related to this approach is at present little developed It is unfortunate, however, that the author has not taken more advantage of the frequent opportunities offered to relate his point of view to more old established if by now more barren ones For example, the non existence in solution of certain metals, such as calcium, in a lower state of ionisation (Ca^+) than the normal (Ca^{++}), despite the predominance of the lower states in ionised vapours, is one of the interesting problems here raised Dr Gurney's explanation in terms of the ionisation energies of the solvated ions and of the solvent is no doubt sound, but it is not very helpful to dismiss as "irrelevant" the non existence of salts in which calcium is monovalent In nearly all cases where a metal exists in more than one state of ionisation in solution, corresponding crystalline salts are known, and rarely is a metal found in a crystal (even an anhydrous crystal) in a state of ionisation which is not realisable in solution On the other hand, the discussion of the Debye Hückel theory, though so brief as to be not entirely accurate, is far better balanced than many much fuller discussions which extend the theory in some particular direction while leaving its basis approximations unexamined

The biggest recent advance dealt with is in that part of electrochemistry which thermodynamics cannot reach The standard electrode potentials and oxidation reduction potentials of metals are discussed in relation to thermionic work functions and energies of solvation To the worker in the biological and medical sciences, whose interest in ions is mainly in their permeability to membranes, and their influence on colloidal dispersion and on ionisation of weak acid groups in complex molecules, the book is of no immediate practical value, because quantum mechanics has as yet little to say on these problems

Morphologische Pathologie

By Prof Dr WERNER HUECK, Director of the Pathological Institute of Leipzig University Leipzig Georg Thieme 1937 Pp 818 R M 52

Prof Hueck breaks away from tradition in the arrangement of subject matter There have been truants before among text books in pathology, for example, MacCallum's work is based on the idea that all pathological changes are the result of some form of injury, this attitude brings with it a liability to teleological thinking Prof Hueck, being a strict causalist, has taken the opposite point of view He discusses the whole of general pathology on a purely morphological basis, and in fact the book may be regarded as a continuation of Oertel's "Introduction to Pathology" It is interesting to find so

many problems approached from a logical standpoint instead of from one which elevates heuristic ideas to the level of final explanations

The book is in two parts the first on general principles, gives an admirable account of the potentialities for differentiation of the mesenchyme and its relation to pathology, and excellent chapters on stone formation and tissue regeneration The section on tumour formation is noteworthy for its comparison between the connective tissue tumours and normal mesenchymal histogenesis, the absence of any adequate account of the systematised blastomata is disappointing The second part of the book deals with "related morphological pathology," which is almost the same thing as what is usually known as "special pathology", no attempt is made to mention lesions in every organ, but a few of the more important disease processes are discussed in detail For example, the account of pulmonary tuberculosis in its various forms, together with its complications—tuberculous enteritis, miliary tuberculosis, and amyloidosis—is excellent, other sections worthy of comment are those on disease of the heart and arteries, the stomach, and the liver This latter section reveals an interesting contrast between German and Anglo American teaching Prof Hueck accepts without question the evolution of a sub acute hepatitis into a chronic stage, yet in nephritis there is no suggestion that an acute nephritis may pass through a subacute oedematous stage before the final uræmic state, "nephrosis" and nephritis are kept distinct, and focal nephritis is not mentioned

A new book of such a revolutionary nature—perhaps revivalistic would describe better a return to the best teachings of "cellular pathology"—is unlikely to maintain throughout a proper balance in the allocation of space or to avoid omission of relevant facts Here endocarditis is merely classed as simple, verrucous, ulceropolypous, or fibrous with little consideration of ætiological factors, the account of endocrine dysfunction in relation to constitutional morphology is too short, and the chapter on leukaemia and anaemia is below the standard of the rest of this stimulating book We commend the instructive diagrams, drawings, and photographs, and the lavish use of colour printing

Venereal Disease

Practical Methods in Diagnosis and Treatment Third edition By DAVID LEES, DSO, MB, DPH, FRCS, FRCP Edin, FRSE Edited and revised by ROBERT LEES, MB, FRCP Edin, Assistant MO for VD to Edinburgh Royal Infirmary and Edinburgh Corporation Edinburgh E and S Livingstone 1937 Pp 608 15s

This good text book on venereal disease has now been brought up to date without having been enlarged The sections which deal with the clinical manifestations of syphilis contain many excellent photographs, including some in colour, which are likely to be of great value to those who seldom have access to this type of clinical material The views expressed on treatment and on standards of cure are in the main orthodox and are set out in a clear and practical way The detailed statement of recommendations for treatment in all stages of syphilis are especially to be commended There are two unexpected omissions The important condition of metastatic mites

secondary to gonococcal infection is barely mentioned and we can find no reference to trichomonas vaginitis in connexion with the differential diagnosis of vaginal discharges of inflammatory origin. On most other subjects the information given is full and complete.

It is unfortunate that some of the methods of expression are slipshod and ungrammatical. More careful proof reading would have excluded such lesser sources of irritation as prostrate gland. These faults should not be allowed to obscure the value of this comprehensive work in which sound theoretical knowledge and wide practical experience are combined.

La vésicule biliaire et ses voies d'excrétion

Second edition By M. CHIRAZ, Professeur Agrégé à la Faculté de Médecine de Paris and I. PAVEL, Maître de Conférences à la Faculté de Médecine de Bucarest. Paris: Masson et Cie 1936. Pp 860. Fra.120.

It is ten years since this standard text-book on diseases of the gall bladder appeared and the second edition necessarily contains important changes. These concern particularly the physiology of the gall bladder and the mechanism of Oddi's sphincter, the etiology of gall-stones, the mechanism of hepatic colic and the bacteriology of cholecystitis. For the chapter dealing with the radiology of the gall bladder Dr A. Lomon is responsible and the reader will find therein an excellent series of illustrations. A considerable bibliography enriches each chapter and there is a full index of authorities as well as of subjects.

Studies in Cardiovascular Regulation

Lane Medical Lectures By G. V. ANREP, M.D. D.Sc. F.R.S. Professor of Physiology, Medical Faculty, Egyptian University, Cairo. London: Humphrey Milford, Oxford University Press 1936. Pp 118. 10s. 6d.

In this monograph Prof Anrep clearly describes the many important advances recently made in our knowledge of the way in which the heart exactly adapts itself to the work demanded of it of the respiratory influence on the heart-rate; and of the coronary blood flow. In a final chapter the blood flow through skeletal and plain muscle is shown to undergo during muscular contraction changes similar to those in the coronary flow during the cardiac cycle. Far from being the master of the circulation the heart is to day regarded as its highly efficient servant, its rate and output being dictated by a variety of reflexes the receptors of which are situated in the walls of the cardiovascular system itself. Prof. Anrep gives an interesting account of how after much controversy the carotid sinus was recognised as an important agent in the control of blood pressure and heart rate. With the aortic and probably also the left ventricular wall and the carotid body the carotid sinus forms the chief vaso-sensory area on the arterial side. On the venous side, in the auricles and right ventricle are receptors which are held to have exactly opposite effects. The complex effects of the impulses from lung tissue and of central discharges from the respiratory centre on the cardiac rhythm are discussed in detail. Their bearing on clinical problems is not yet clear. The sections on the coronary blood flow deal not only with matters of importance to the physiologist such as the effect of systole on

the flow but also many which directly concern the clinician and cardiologist for example the rich dual innervation of the coronaries the reflex constriction which occurs in them when the carotid sinus is stimulated, the effects of certain drugs and the atypical reactions when they are sclerosed. Prof Anrep has contributed largely to cardiovascular physiology. His Lane lectures are a record of his personal observations including those arising from important experiments which he has been able to carry out in Egypt on the human heart obtained soon after death.

1 Practical Physiological Chemistry

For Medical Students By G. M. WISHART, D. P. CUTHBERTSON and J. W. CHAMBERS. Glasgow: John Smith and Son Ltd. (26 Gibson street Glasgow W.2) 1936. Pp 125. 3s. 6d.

2 Laboratory Experiments in Physiological Chemistry

By ARTHUR K. ANDERSON, Ph.D. Professor of Physiological Chemistry, the Pennsylvania State College, London: Chapman and Hall Ltd 1936. Pp 234. 7s. 6d.

1. DESIGNED for use with a forty hours course in practical biochemical work, this excellent little book is eminently suitable for this purpose being concise and accurate. The omission of the estimations of phosphate and sulphate in urine is regrettable and sodium hydrosulphite is preferable to ammonium sulphide as a reducing agent in the study of the blood pigments. This is an outstanding little book.

2. This may be described as the text-book interrogatory and local; interrogatory because the reader instead of being told what the result of an experiment should be is questioned by the author on that very point local because the reader is for example exhorted to obtain from the instructor in a dry flask the sample of vinegar to be analyzed. It is possible that in other places than those familiar to the author other customs may obtain and the instructor not be so well provided. In explanation of the sentence (p. 40) by means of a clean graduate add 240 c.c. of water to a beaker it is a measuring cylinder and not the instructor which is to be put to use.

Physical Diagnosis

By RALPH H. MAJOR, M.D. Professor of Medicine in the University of Kansas. London: W. B. Saunders Co 1937. Pp 475. 21s.

This valuable text book on physical diagnosis embodies fifteen years' experience in teaching by an enthusiast for clinical medicine. Though the personal element is essential for teaching at the bedside it can be tiresome and pedantic in print but Prof Major is not guilty in this way. His tone is not didactic and he makes use of all the recognised authorities and recent work with frequent quotations and extensive lists of references. His admiration for the pioneers of diagnosis leads him to quote their original descriptions in many places but the emphasis is fortunately not on the past. Full credit is given to such valuable advances as the X-ray, the electrocardiogram and the phonogram in explaining the significance and the physical basis of signs. The views expressed are on the whole in line with orthodox British teaching though as is natural where experience depends on local observation material points of disagreement will be found; for example

pathological findings in this country do not suggest that the diagnosis of aortic insufficiency with a Flint murmur is more often correct than that of the combined lesion with mitral stenosis. The statement that the wrist drop in lead poisoning is due to a paralysis of the ulnar nerve is of course merely a careless error.

Though there can be few practitioners who would not find interest in this work, and no teachers of medicine who could not pick up a wrinkle or two from it, it has two disadvantages from the point of view of the student for whom it is intended. First, it is too long, aspects of disease other than physical diagnosis might well have been left out, since they could not be discussed adequately in the available space. The benefit derived from learning the signs necessary for a diagnosis of aortic stenosis for example is nullified if the student goes away with the impression that it is caused equally commonly by syphilis, arterio sclerosis, and rheumatism. Secondly, it is important that the student should know which physical signs are nowadays regarded as significant and reliable, this is not always made sufficiently clear, and the historical emphasis may encourage the seeker after strange signs who may miss dilated and pulsating veins in the neck when bending down in search for Broadbent's sign. On the other hand the many excellent photographs, the helpful diagrams, and, above all, the impulse of Dr Major's enthusiasm may transmit to the student the thrill which will send him to the bedside, there to look, listen, and feel for himself.

Physical Therapeutic Methods in Otolaryngology

By ABRAHAM R. HOLLENDER, M.D., F.A.C.S., Associate in Laryngology, Rhinology, and Otolaryngology, University of Illinois College of Medicine. London: Henry Kimpton 1937. Pp 442. 21s.

Dr Hollender has had the help of ten collaborators, but is himself responsible for the larger part of this massive work. A preliminary section deals with the physical characteristics of the various agents under discussion and the apparatus used in their production, the main part of the volume is concerned with the numerous diseases of the nose, throat, and ear in which these methods may be employed, and is followed by a few miscellaneous chapters. Among the latter is one by Chevalier L. Jackson on endoscopy, and another on hearing aids by Prof. Horace Newhart which, although interesting, have little bearing on the subject of physical therapy. Prof. Francis Lederer has contributed to this part of the book two chapters on neoplasms, in general he favours diathermy, or electrodissection, but gives no detailed description of the various forms of tumour nor of the technique of their individual treatment. This criticism may also be applied to his references to treatment by radium and X rays, where details of application and dosage are not discussed, of laryngeal carcinoma he merely says that radium has proved to be an ineffective therapeutic agent.

It is difficult to decide what methods should be included within the term of physical therapy. From this book the galvano cautery and all forms of spa treatment and inhalation therapy are omitted. All the methods here dealt with, except the use of radium, involve the use of electrical apparatus, and include such various procedures as ionisation, diathermy in all its forms, short wave diathermy, infra red and ultra violet irradiation, and X rays. These new

methods, as opposed to older forms of treatment, are advocated with a degree of enthusiasm which some will think exaggerated, notably where short wave radiation is hailed as "perhaps the most important contribution since Roentgen's epochal discovery," where diathermy is recommended for the reduction of the inferior turbinates, and the galvano cautery is condemned because in unskilful hands it may cause adhesions. A detailed table of contents is provided, as well as a full index. The book contains useful information on the treatment of a great variety of diseases by these methods, and will be read with interest by laryngologists.

Rural Health Practice

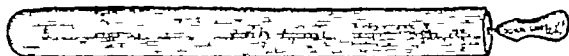
By HARRY S. MUSTARD, M.D., Associate Professor of Public Health Administration, Johns Hopkins University. New York: The Commonwealth Fund, London: Humphrey Milford, Oxford: University Press 1936. Pp 603. 17s.

THE Local Government Act of 1929, by requiring all future appointments of medical officers of health to be on a full time basis, has inaugurated a new type of expert in rural hygiene to whom Prof Mustard's book will be most valuable. Such an expert should have no difficulty in separating common ground from that which represents differences between American and British practices. In the United States also part time public medical officers, often appointed for political or charitable reasons, are now giving place to full time experts having some security of tenure of office and therefore the time and inclination to make themselves expert in their particular branch of medicine. This is the justification for this work, which is compiled on original lines. Prof Mustard is one of America's foremost hygienists and is almost as well known in Europe as in the States as an authority on rural hygiene—because he says he has "already made most of the mistakes which it is possible for a rural health officer to make." This book is full of sound advice and is wittily expressed.

NEW INVENTIONS

A MODIFIED RECTAL BOUGIE

THE modified Wales's rectal bougie here illustrated is designed for the purpose of dilating high strictures of the rectum. It is not safe in such a situation as the upper end of the rectum to use rigid metal dilators, or any form of dilator that cannot be passed through



the stricture under full sight. The bougie is made of soft rubber in gradually increasing sizes and can be passed through a large rectal speculum or preferably an operating sigmoidoscope. The difficulty of using soft rubber bougies in these circumstances is that they buckle up, but this bougie has a hole reaching not quite to the end into which a stylet can be passed to stiffen it, and to make it possible to guide it in the desired direction.

The bougie has been made for me by Messrs Down Bros, Ltd, St Thomas's street, London, S.E.

J. P. LOCKHART MUMFERY, F.R.C.S. Eng.
Emeritus Surgeon to St Mark's Hospital for
Diseases of the Rectum

THE LANCET

LONDON SATURDAY APRIL 10 1937

PSYCHIATRY IN VOLUNTARY HOSPITALS

As part of its rebuilding scheme St George's Hospital hopes to equip itself with a psychiatric clinic of 50 beds. The idea of incorporating such a clinic in an undergraduate teaching hospital has such striking advantages that it is indeed remarkable that it has not received effective expression before now. Most of these hospitals now have psychiatric departments but these are concerned mainly with out-patients. From 1923 on the governors of St. Luke's Hospital maintained for a time two small wards for acute mental cases at the Middlesex Hospital but now in all the London teaching hospitals taken together the beds allocated to psychiatric cases add up to only about a dozen and even of these not all are adapted to the reception of refractory or overtly psychotic cases. In the course of his training the average student has little opportunity to observe the full course of mental illness. If he is sufficiently interested to attend regularly the psychiatric out-patients department he can see a sample of mentally abnormal patients at perhaps weekly intervals for a period of from three to six months but this is a poor substitute for the opportunity to observe them in a bed from the moment of admission to that of discharge. The effect of the existing system is that the student obtains his impressions of psychiatry in heterogeneous ways. As he imbibes his general medicine he will learn how important is the psychological factor in physical diseases in the department of psychological medicine he can if he wishes familiarise himself with the common neuroses in the habitues and hangers-on in these departments he will make acquaintance with the chronic neurotic and will appreciate how complete can be the dependency of such persons on doctors. He will see an occasional psychotic case referred to the department for an opinion or retained as an out-patient if certification is not deemed necessary. But with the psychotic requiring care and control he will have very little contact except at periodic demonstrations usually held at a place far removed from the scene of his usual medical studies. Though he may be expected to have a knowledge of the psychoses sufficient to answer a few regularly set questions in the final examinations his attitude after qualification can frequently be summed up in the view that neurotic patients are a tribulation and psychotic patients a class by themselves. Of these he retains from a course of demonstrations an impression comparable to that obtained by a visitor from a series of visits to the Zoo.

In the field of neuroses a practitioner's reluctance or incapacity to deal with the cases that come under his care is reflected in the enormous waiting

lists of organisations such as the Institute of Medical Psychology and in the field of the psychoses there results from the existing system a popular conviction that mental illness carries a stigma which does not attach to physical disease, and that certification is a kind of disgrace. To this attitude of mind is attributable the change of name of some well known hospitals for example Hanwell Hospital becomes St Bernard's Hospital. Even if a student is specially interested in psychiatry it is only after qualification that he will be able to obtain a comprehensive first hand experience of the total range of mental disorder. As a part of such experience the neuroses and psychoses between which a fundamental distinction is commonly and erroneously drawn should be studied simultaneously. Though admirable facilities exist for such study at the Maudsley Hospital, they have not hitherto been available at the undergraduate teaching hospitals. In the Scandinavian most north European countries and in America the medical profession is more effectively equipped to deal with mental illness before qualification. A psychiatric clinic with beds is usually incorporated with or closely affiliated to the general hospital. The advantages of this system are felt equally by the medical profession and by the public. The student is familiarised in the clinic with the principles of diagnosis and treatment of the psychiatric cases potential or actual which he will encounter in his later life and the interests of the able and ambitious student are directed to psychiatry in which an opportunity is provided of obtaining what we would call a house appointment at his teaching hospital. The specialty is benefited by obtaining recruits of good calibre and the needs of the public are well catered for.

Many years ago the late Dr JAMES COLLIER organised a course of neurological demonstrations at St George's Hospital which since his death have been continued at fortnightly intervals by Dr ANTHONY FEILING. These are not confined to students of the hospital indeed they have been attended by large audiences from outside. For some months psychiatric demonstrations have alternated with the sessions devoted to neurology and have been conducted by Dr DESMOND CURRAN with the generous assistance of the senior staff of the Maudsley Hospital. It is a wise plan to provide a nucleus round which the department can expand when facilities are available and to familiarise local doctors with the idea that expert consultants are to hand. We wish the scheme every success and will watch its development with interest. And it may be noted with gratification that an anonymous gift of £,000 has already been received towards the cost and equipment of the department.

INFECTION THROUGH THE OLFACTORY MUCOSA

It has lately been shown in America that susceptibility to infection with certain viruses can be reduced or abolished by treatment of the

olfactory mucosa with solutions of tannic acid, alum, or picric acid. It has been suggested that this means might be of use in the prophylaxis of poliomyelitis and possibly also of other infections that gain entrance by the nose. In this connexion it is useful to have a report by Dr GEOFFREY RAKE¹ from the Rockefeller Institute. His object was to learn how micro-organisms gained the tissues when deposited on the olfactory mucosa and to this end he first studied the absorption of prussian blue administered to mice intranasally. The method is not a new one, having been used for a somewhat similar purpose by CLARK and also by OLITSKY and COX, and like them, RAKE found that the absorption of the particles of dye was extremely rapid. Within two minutes it was seen in the lymphatics and blood-vessels of the olfactory submucosa and had reached the sub-arachnoid space. Apparently the pigment was absorbed by more than one route. Some of it passed inwards between the cells of the olfactory mucosa, but the larger part was taken up by the olfactory nerve cells, from there to be dispersed again to the surrounding tissues. This was clearly brought out by experiments in which the mice had been given a preliminary intranasal application of 0.8 per cent tannic acid, for in these animals, although the dye reached the subarachnoid space just as rapidly though in less amount, the olfactory nerve cells were almost devoid of prussian blue. RAKE noted also in these treated mice that, although they showed no nasal discharge during life, when they were killed and examined a thick exudate of mucus and leucocytes covered the olfactory mucosa and turbinates and histological sections revealed obvious signs of inflammation. Experiments with bacteria—the pneumococcus and *Bacillus enteriditis*—showed that both these pathogens reached the brain as rapidly as the pigment, but that, unlike pigment, they travelled between the cells and not via the neurones. This observation explains previous work² showing that intranasal administration of tannic acid to mice confers no protection against pneumococci given by the same route. In the case of viruses RAKE found that a pantropic virus like that of equine encephalomyelitis reached the brain just as quickly as did pigment or bacteria, whereas strict neurotropes like the viruses of St. Louis encephalitis, louping ill, and rabies took 24 hours to do so. Presumably all four viruses were taken up by the olfactory nerve cells but the strictly neurotropic ones were held there and passed slowly inwards to the brain, whereas the pantropic equine encephalomyelitis virus, like pigment, left the olfactory neurones and travelled to the brain by the more rapid routes represented by the tissue spaces and lymphatics.

The practical lesson of this work seems to be that treatment of the olfactory mucosa with tannic acid or similar preparations is likely to be most effective against a strictly neurotropic virus and ineffective against bacterial invasion. It also sounds a note of warning in that a very definite

inflammatory response resulted in the mouse from the nasal instillation of tannic acid. This would make one hesitate to advocate such a procedure in man, for repeated applications of these preparations are required to give protection and the risk of producing chronic change resulting in an atrophic rhinitis cannot be excluded.

VOX POPULI

THE People's League of Health, having made its voice effectively heard for many years in support of several good causes, has decided to add to their number. It was in 1917 that Miss OLGA NETHERSOLE founded the League, and its achievements were indicated at a luncheon recently given in her honour¹ when Lord LEVERHULME foreshadowed an appeal to be launched at the Guildhall on Thursday of next week at which the Lord Mayor of London will preside. The essential purpose of the League has been the collection and distribution of knowledge—knowledge based on scientific foundation and presented in attractive form. The Safe Milk campaign, with its inquiry as to the best means of eliminating tuberculosis from milk, yielding cows and as to the value of milk as food for school children, is the best known of the League's activities, but the League has been invited to draw up a memorandum on the composition and description of foods, and it has initiated a study of maternal mortality and morbidity in cooperation with nine metropolitan hospitals. The League, while proposing to continue these campaigns and its activities as a bureau of health information, is now propounding eight other subjects in its new programme.

It has in prospect a centre for the practical demonstrations of a scheme for the eradication of tuberculosis from dairy herds. It proposes to develop a central almoner service where information can be obtained about everything like child welfare clinics, nurseries of various kinds, or the adoption and boarding-out of children. It intends to examine the conditions under which infants and older children are received by foster-mothers. It contemplates a survey of children under treatment at orthopaedic hospitals and other institutions where surgical tuberculosis is treated. It hopes to press upon the Government the value of compulsory periodical medical and dental examinations of all persons insured under the National Health Acts. The position of the expectant mother under these Acts is to be made the subject of inquiry. The League has already emphasised the psychological aspect of unemployment and considers the time has come when no person should have scars left on his mental and physical health simply as a result of being unemployed. Finally the League will continue to study all proposals, legislative and otherwise, relating to the health of the people and the circulation of information designed to promote it. The appeal for £50,000 now being made should meet with a ready response in view of the League's past record and present intention.

¹ RAKE, G. W. (1937) *J. exp. Med.* 65, 303.

² Cox, H. and Rake (1936) *Proc. Soc. exp. Biol.* N.Y. 34, 716.

¹ See *Lancet*, Feb. 6th, p. 362.

ANNOTATIONS

A QUESTION OF NEIGHBOURLINESS

MANCHESTER is learning afresh the precept that almsdoers should not let their left hand know what their right hand doeth. One form of public benevolence is the relief of pain and sickness by hospitals; another is the relief of unemployment by labour exchanges. Manchester has a Royal Infirmary with a central branch where two eminent honorary surgeons and a resident staff do their best for very serious cases to the number of 1300 to 1400 per annum. The Minister of Labour in spite of protests, has begun to erect alongside this central branch a large building which will deprive the patients of light and air will cause the wards to be overlooked from scores of windows and will collect in a narrow space at close range a crowd of possibly 300 unemployed not always perhaps the most quiet and orderly of gatherings. The Minister is doubtless not his own master. He wants to find a home for the divisional office for the North West of England the Central Employment Exchange for Manchester and other departmental offices. His Majesty's Office of Works owns an empty space bought soon after the war adjoining the central branch of the infirmary. Naturally the Minister of Labour wants the best site; naturally the Office of Works has it available already. Between them they can tell the Royal Infirmary that its patients have been lucky all these years to look out upon a vacant space, and that whereas the central branch is inconveniently situated and may some day have to move, the new employment exchange will be a permanent adornment of the city. What the Minister of Health thinks of the dwarfing and obstructing of the Royal Infirmary we have not been told. What the medical board and the local medical officer of health think about it we know. The Minister of Labour has been assured on good authority that his building will make the central branch unsuitable for inpatient accommodation and gloomy and depressing for a casualty department. He has been asked either to alter his building or to put it somewhere else or to take over the Royal Infirmary's building and help the trustees to replace the 54 beds which in that event would be lost. He replies that he has considered all alternatives and has rejected them; he cannot wait any longer the building must begin.

The dwellers in a peaceful part of the Thames Valley lately learnt that a munition factory was to be established in their midst. They protested successfully; the department concerned gave way at the eleventh hour in spite of having repeatedly stated that no other place would do. Manchester has been less lucky. The Minister of Labour could not change his mind. Four years ago with the obvious sympathy of the Ministry of Health Parliament passed an Act to aid the fortunes of the Royal Infirmary. To-day another Ministry insisting firmly on its legal rights takes a step which will have the opposite effect. The trustees of the hospital have put forward a reasonable argument. The infirmary and the employment exchange they say are alike public services paid for out of public money. If the expenditure of the infirmary is not met from one set of pockets it must be met from another. If the infirmary had in fact been the home of a Government department conducting important research in health matters, the Minister of Labour would have refrained from neutralising its usefulness. If he now finds himself destroying the value of Manchester's only

central hospital ought he not either to hold his hand and change his plans or else help it to find proper accommodation elsewhere?

ANÆMIA AND THE PITUITARY

THE production of acute ulceration of the acid secreting area of the stomach of rabbits by injection of massive doses of a posterior pituitary extract was first described by Dodds and his collaborators¹ in 1934. In a further communication² they discussed the influence of large doses of pituitary extract on the blood and suggested that the macrocytic anemia it induces may be due to increased blood destruction and consequent regeneration their findings leading them to postulate a hormonal connexion between the pituitary the gastric function and the blood. On the assumption that the anemia may be due to blood dilution from the antidiuretic action of the pituitary Gillman and Goodman³ have studied the blood changes in rabbits resulting from large doses of the extract. They find that much dilution does in fact occur—the hemoglobin the number of red cells and the plasma osmotic pressure being all reduced—while cell destruction is sometimes superimposed upon it. The macrocytic anemia was similar to that described by Dodds but they attribute it to the altered environment of the cells during plasma dilution making them more fragile. In the test tube the red-cell fragility was actually reduced by lowering the plasma osmotic pressure yet in vivo cell destruction was increased. All these changes could be prevented by dehydrating the animals before injection of the pituitary extract. McFarlane and McPhail⁴ have also produced anemia by injections of pituitrin into normal and hypophysectomised guinea-pigs, but they did not investigate the anemia further. They state that they have failed to find any hormonal connexion between the pituitary the gastric function and blood formation.

in the country, so depriving the famous Oxford marmalade of the little bit extra which might have merited so much to those who endeavoured to uphold the prestige of the University upon the Isis. The latent possibilities in drugs, the mystery and the magic, naturally invite still greater expectations from such extremes as the simplest kitchen ingredients and the most obscure secrets of native witch doctors. At a recent meeting of the Berlin Medical Society Prof. Helmut Drenning, director of the Morbit Medical Clinic, claimed¹ an increase of physical capacity and endurance by 30 to 100 per cent from the administration of natron, being bicarbonate of soda, to hasten the elimination of acids, especially lactic acid. The simplicity of the method recalls the remarkable effect of delaying fatigue ascribed² to acid sodium phosphate during the late war when this salt was administered to the German storm troops. Investigations undertaken in America³ failed to confirm the claim. Any advantage derived from the phosphate was due to the increased sense of well being or the lessening of tiredness created by its stimulant action on the intestinal tract; there was no measurable increase of muscular efficiency, nor was the onset of fatigue delayed. And this was confirmed by the personal experience of a well known physician athlete in this country. It is common experience that in moments of stress the physical capability may be increased to an extent hitherto unexpected and almost unbelievable. In everyday life there are inhibitions which, acting like a governor, prevent a maximal effort being put forth; any drug which can diminish sensitiveness, paralyse the appreciation of fatigue, and eliminate the faculties of judgment and self preservation might have the effect described as doping in the case of race horses. On the continent it seems to have been necessary to issue a warning to athletes not to dope themselves.

DRAINAGE OF THE PERITONEAL CAVITY

THERE is something to be said for J. E. Jennings's contention⁴ that so called drainage of the abdominal cavity is usually "superstitious and ineffective packing." It is well established that none of the ordinary methods gives anything approaching general peritoneal drainage, but how far is this fact recognised in practice? Discussing Dr. Jennings's paper, Dr. W. B. Parsons of New York said that five surgeons suddenly confronted with the problem might be expected to give five different opinions about the right way to drain an appendix or gall-bladder, and as to why a drain is wanted in one case and not in another. Since localised drainage is alone possible the indications for insertion of a drain are definitely restricted. The most obvious benefit to be gained is the formation of a "path of least resistance" for localised infection actual or anticipated. Jennings holds that tubes or gauze strips—the materials usually employed—irritate the tissues producing an exudate which at the same time tends to block the drain and encourage walling off of the infection. Most drains act partly as packs, and unless the infective process is localised their value as drains will be nil. In his opinion the indications for localised peritoneal drainage are, broadly speaking, two. In the first place, drains may be inserted at the end of operation to remove exudate, blood or bile collecting at the operation site or to serve as sentinels where a leak is feared at a line

of suture in a hollow organ. Secondly, they may be used to remove infected exudate, such as pus, in cases of localised peritonitis. Here the amount of drainage that actually takes place through the tube or gauze is slight, and the important effect of the drain is that a track is made down to an "extra peritonealised" cavity. The use of a material with the minimum of irritation to the tissues will reduce or prevent the formation of localising adhesions, and such a material Jennings claims to have found in raffia. Selected strands are chosen, cleared of strangling fibres, washed in boiling soap and water, cut into standard lengths, knotted in hanks of twenty strands, and wrapped in muslin packages. Sterilisation is carried out on three successive days, and the required strands are reboiled just before use. Raffia has a capillary action and is very strong; it is also smooth and inflicts the minimum of injury during removal. Jennings has employed it for twenty years and has found it especially useful where a drain is required simply to remove an exudate, and where no advantage can result from its acting as a pack.

VITAMIN-B DEFICIENCY AND THE HEART

HEART failure resulting from vitamin B deficiency has long been known in the East as an accompaniment of beriberi and pellagra. An early view was that, like the neurological symptoms, the heart affection was secondary to a neuritis, the vagus nerves being the site of the lesions. When in 1927 Wenckebach discussed this subject in our columns,¹ he suggested that the functional failure of the beriberi heart was due to oedema of the myocardium. Weiss and Wilkins² have now come to the conclusion that similar deficiency states, accompanied by cardiac disease, are not uncommon in the United States, and they have been able to collect 97 cases, 12 of which they observed personally. As evidence of vitamin deficiency they accepted polyneuritis, pellagra, dermatitis, glossitis, and gastro intestinal disturbances, and a history of an inadequate diet. The heart lesions associated with these conditions could not be put down to other recognised factors, and the symptoms and signs of such lesions improved after administration of vitamin B. The circulatory symptoms were variable, but prominent among them were dyspnoea, regular tachycardia, palpitation, and exhaustion. These, with excessive arterial pulsation, loud sounds over the arteries, and a rapid circulation rate, are features that recall the circulatory changes in goitre and also in some functional nervous disorders. Such symptoms were found especially in association with polyneuritis. Syncopal attacks, exaggerated sensitivity of the carotid sinus, vaso motor collapse, and bradycardia in convalescence were also observed and were regarded as signs of nerve lesions. On the other hand, some of the symptoms often encountered are more characteristic of hypertensive and ischaemic heart disease—for example, gallop rhythm and congestive failure with normal rhythm. Cardiac enlargement was usual and changes in the electrocardiogram were rarely absent; these included low voltage, altered T waves, premature beats, and occasionally auricular fibrillation. Histological studies on a few cases that came to autopsy showed myocardial changes like those described by Wenckebach, but these are held by Weiss and Wilkins to be in no way specific. The treatment of these cases is simple enough, consisting in rest and

¹ *Belfast Telegraph*, March 19th 1937.

² Emden Schmitz and Melnick (1931) *Hoppe-Seyler's Z.* 113 10.

³ *Phil. Phil. J. exp. Med.* 1926 29.

⁴ *Ann. Surg.* January, 1937 p. 67.

¹ Wenckebach K. F. (1928) *Lancet*, 2 263.

² Weiss S. and Wilkins R. W. (1936) *Trans. Am. Assoc. Phys.* 51 341.

administration of vitamin B₁—if necessary giving the crystalline B₁ by injection. Improvement was striking signs of congestion for example disappearing far more rapidly than might be expected in other forms of congestive failure the electrocardiogram also quickly regained its normal form. In animal experiments such effects are even more remarkable gross electrocardiographic changes seen in rats suffering from vitamin B₁ deficiency could be abolished within twelve hours by an injection of crystalline B₁ (Zoll and Weiss²).

This paper by Weiss and Wilkins is of great interest and the six cases they record in detail would be hard to explain in ordinary ways—except perhaps one in which the patient appears to have had hypertension. Five of these six patients had alcoholic polyneuritis now regarded as directly due to lack of vitamin B₁, and it is possible that inquiry into such cases in this country though now of course relatively rare might reveal significant cardiovascular disturbances.

JUDGMENT AND REASON

Dr Hutchison's little trilogy on the fundamental principles of clinical medicine³ has reached us in its second edition. For the rounded felicity of their style and the practical wisdom of their content his essays are well worth re-reading. The preface puts words into the reviewer's mouth although there is nothing in them that has not been said often before there is also nothing in them that will not bear saying again. In the essay on diagnosis we read that this art involves the use of observation of knowledge and of judgment and by judgment is meant an intuitive faculty of distinguishing the relative importance of things. The use of reason is not mentioned which is a little discouraging for those who labour in the faith that scientific methods and scientific ways of thinking have much to contribute to medicine. Not the most ardent of them however can deny that medicine as it is practised, is still largely empirical. And there is certainly the danger which Dr Hutchison would guard against that the art of dealing wisely with the sick may be perverted by pseudo-scientific enthusiasms. Most of us would be the better for turning over these pages again and a copy would not come amiss as a gift for some medical student of our acquaintance who may be approaching his final examination.

URETERO-INTESTINAL IMPLANTATION

Eighty years have elapsed since Simon made the first attempt to divert the urine into the bowel and during these eighty years more than a thousand such operations have been performed. Hinman and Weyrauch⁴ who have written an elaborate account of the methods used complain that previous reviewers have laid too little stress on the surgical principles on which a satisfactory operation must be based. An historical review can be of use to the surgeon to day only if it teaches the way to implant ureters more successfully than has been done in the past. The conclusions Hinman and Weyrauch themselves reach are not altogether optimistic. They are left with a feeling of disappointment at the lack of

improvement with the advent of newer methods and greater experience. It would seem that every surgical technique imaginable has been tried. Of the eleven methods listed, submucous implantation has given the best results yet many questions about it still require answers. What are the factors that produce localised necrosis of the intestine or perforation and tearing-out of sutures? Why is anæmia infarction extensive necrosis diffuse ureteritis, or dilatation of the ureter found at autopsy? Too often the answer to this will be failure on the part of the operator to obey the simple well known rules of intestinal and ureteral surgery. The only layers that are safe for suturing are the submucous layer of the bowel and the adventitia of the ureter. Sutures cannot penetrate the lumen of either without danger. Their blood supply cannot be disturbed to any great extent neither can they be unduly bruised twisted or displaced. These are some of the principles that must be followed if postoperative accidents and complications are to be reduced. Besides these problems of technique there are others needing consideration, such as urinary sepsis. Some times varying degrees of pyelonephritis or infected hydronephrosis are present before operation and experience shows that such conditions are often favourable rather than otherwise because they favour immunity. The surgeon must needs consider not only his surgery but the possibility of raising the patient's resistance to it.

RESPIRATORY EFFICIENCY

WORKERS in many centres continue the search for an easy way of expressing the degree of efficiency or failure of the respiratory apparatus. Kaltreider and McCann⁵ report investigations on patients with chronic pulmonary disease comprising estimates of the ventilation respiratory rate tidal volume oxygen consumption and carbon dioxide production during a standard form of exercise in 20 normal subjects and in 28 patients with cardiorespiratory abnormalities. They also correlated their results with blood examinations and certain measurements of the chest. From these they conclude that the amount of dyspnoea is proportional to the expression $\frac{\text{total ventilation}}{\text{vital capacity}}$. They find that dyspnoea is experienced when this value is greater than 51 and that excess of this figure at low levels of work is an indication of pathological dyspnoea. The maximum minute ventilation that can be maintained for 1½ minutes is only roughly proportional to the vital capacity in normal subjects, but in chronic pulmonary disease the relation is closer. In their examination of other suggested tests for respiratory efficiency Kaltreider and McCann make certain valuable criticisms as for example, that the ventilation equivalent for oxygen (the amount of ventilation required per 100 c.c. of oxygen absorbed) suggested by Knipping Lewis and Nonce⁶ is not a good index of the degree of dyspnoea since it varies from person to person. The pulmonary reserve on the other hand is held to be a useful measure of the tendency to dyspnoea. Normal subjects can increase their resting minute volume about ninefold but patients disabled by pulmonary fibrosis and emphysema could often increase their ventilation only to about 60 per cent of the maximum minute ventilation on moderate exertion. The basis of the investigations has been the results obtained with subjects harnessed to a closed spirometer and in

² Zoll I. M. and Weiss S. (1936) *Proc. Soc. exp. Biol.* 11, 259.

³ Principles of Diagnosis, Prognosis, and Treatment. Second edition. By Robert Hutchison, M.D., LL.D., F.R.C.P., Consulting Physician, London Hospital and Hospital for Sick Children, Great Ormond-street, Bristol. John Wright and Sons, Ltd., London. E. Arnold Marshall, Jr., 25, St. 6d.

⁴ Hinman I. and Weyrauch, H. M. (1936) *Trans. Amer. Ass. Gen. Surg.* 29.

⁵ Kaltreider N. L. and McCann W. S., *J. Clin. Invest.* January 1937 p. 73.

⁶ p. 73.

two other papers: Lessen, Courmand, and Richards, offer damaging comments on certain of the measurements made of the respiratory gases in a closed breathing circuit. They show, for example, that when a normal person breathes for several minutes in a small closed circuit in which the oxygen concentration is steadily decreasing, a state of equilibrium is reached and maintained in which the concentration of the nitrogen expired is less than that of the nitrogen inspired. This is due to the progressive increase in inspired nitrogen concentration with each breath, to mixing of inspired air in the lungs with air previously inhaled, and to the exhalation of mixed samples. In the determination of residual air volumes by quiet breathing, in a closed circuit apparatus, use of alveolar air samples, obtained before and at the end of the breathing period, enables a correction to be made for the inequality of concentrations of inert gases through the system. This correction may amount to several hundred cubic centimetres in normal subjects. In patients with emphysema, with a poor distribution of tidal air and hypoventilation through a large part of the pulmonary air spaces, the errors may be even greater if the residual lung volumes are determined by methods of quiet breathing in a closed circuit. This fallacy of what these authors call "nitrogen lag" is one demanding serious attention since it may well prove to be one of the reasons why similar, but not exactly the same, spirometric experiments in different centres seem to give widely different results.

TUMOURS OF THE HAND

THE swellings other than acute infections that may arise in the hand are discussed by M. L. Mason³ (Chicago) with reference to origin and prognosis after removal. Ganglia he regards as being probably due to a gelatinous degeneration in the fibrous sheaths of the tendons or joint capsules, and not to synovial herniation as was previously held. Epidermoid cysts are attributed for the most part to implantation of epithelial cells, while a few may develop from congenital inclusions. Xanthoma is a tumour peculiar to the extremities, whose origin is not settled. It occurs as a firm slowly growing nodular mass, most often on the volar surface of the thumb or finger. The tumour is made up of lobules of yellow, orange, brown, and grey tissue, bound together by septa, and surrounded by a thin capsule. Microscopically it is seen to be composed of giant cells, large round cells, spindle cells, and foamy cells, it does not recur after complete removal. Fibromas and lipomas in the hand behave as they do elsewhere in the body. An interesting tumour is a telangiectatic granuloma, which follows infection in an abrasion. It bleeds freely, and recurs if not completely excised. Subungual melanoma and carcinoma are described, likewise carcinoma arising in an irritative lesion as after burns thermal and radiological, or chemical irritants. The prognosis of these is bad. Chondromata are common in the metacarpals and phalanges. Angiomata of various types occur in the hand. A tumour of recent recognition is called a glomus tumour, arising under the nail bed and sometimes elsewhere in the hand. It is said to be developed from the neurovascular arterial glomus of Masson,⁴ and is made up of blood vessels with thickened walls the media being replaced with epithelial cells, smooth muscle-fibres and innervated and unmyelinated nerve-

fibres. When this tumour is removed complete it does not recur.

Such detailed studies of regional surgery provide a useful pathological background for guidance in treatment.

CANCER OF THE LUNG

THE faint ray of hope that has flickered into the prognosis of carcinoma of the lung made it a suitable subject for the Silvanus Thompson lecture delivered at the British Institute of Radiology's congress last December. This lecture, which we summarised at the time, appears in full in the March issue of the *British Journal of Radiology*. The lecturer was Dr. A. C. Christie of Washington, and under the head of diagnosis he makes it very clear that earlier recognition is essential if treatment is to have a chance of success in more than a minute proportion of cases. When a patient of 40 or over complains of persistent cough with a small amount of sputum, sometimes blood stained and accompanied by moderate dyspnoea and pain, the suspicion of carcinoma should at once be raised. Physical signs are of little value and in reaching a diagnosis there must be careful correlation of information obtained by various means of which the most important are radiological and bronchoscopic. Once recognised, there is now a possibility of complete eradication of the growth and for this purpose total pneumonectomy is tending to take the place of lobectomy. Although it is at present applicable only in a small proportion of cases, the fact that any cures are possible should stimulate interest in early diagnosis to such an extent that these operable cases cease to be such rare exceptions. Radiation therapy has on the whole been disappointing in lung cancer, and it must be admitted that highly differentiated tumours in this region are almost completely radioresistant. With less differentiated tumours Dr. Christie considers the results more encouraging, especially when after careful localisation of the tumour, it is irradiated through several relatively small portals.

A CONFLICT OF PHILOSOPHIES

A LITTLE book¹ written with obviously sincere moral and religious convictions attacks what have been called, and perhaps properly, the "pretensions" of science in the philosophical and moral fields. In particular it attacks, on the one hand, the crude materialism implied if not expressed in many popular biological writings, and, on the other, the somewhat patronising attitude taken towards theology in modern books of cosmology and physics. One can understand the irritation aroused by this attitude in persons of a theological turn of mind whose humanistic background stretches beyond Heisenberg and Einstein to Spinoza and Jonathan Edwards. It is not unreasonable to regard the "indeterminacy principle" as a device of the physicist to get himself out of an awkward situation of his own making. Stepping stones have, before now, in science, been mistaken for foundation stones. The modern philosopher physicist might well feel some misgivings that illustrations from "Alice in Wonderland" come so glibly from his tongue. Even "free will" theologians of the sterner sort will hardly appreciate concessions that might equally be given as an excuse

³ *Lancet* 1937, H. C. A. Courmand and Richards, D. W. Jr. *Ibid.* pp. 1 and 9.

⁴ *Surg. Gynec. Obstet.* 1937, 64, 129.

¹ *Masson P.* (1921) *Lyon Chir.* 21, 257.

¹ *The Philosophy of Religion versus The Philosophy of Science: An exposure of the worthlessness and absurdity of some conventional conclusions of modern science.* By Albert Eagle, lecturer in mathematics in the Victoria University of Manchester. Printed for private circulation and obtainable through all book sellers from Simpkin Marshall Ltd. 1935. Pp. 3.2. 5s.

for believing in any nonsense Mr Eagle is a trained mathematician and physicist and as such is obviously more at home in physics than in biology psychology or economics His attack on the relativity theory though it could no doubt be parried by an expert relativist is at least a pungent statement of the reactions of the ordinary man to the theory The main fault in this book is that the author attacks too much and too wildly and the reader becomes bewildered by his digressions through relativity and indeterminacy evolution and embryology psychology capitalism communism and the rest A philosopher must not be blamed for exercising his proper function as a critic of universal knowledge

but it needs happy moments for this skill and it is hardly work for the amateur Mr Eagle does however succeed in reminding us how many slipshod philosophical notions reach the ordinary reader in the form of asides in popular scientific writings This is difficult to avoid as the ordinary reader craves for general and sensational ideas and a sop must be thrown to him from time to time How far he is misled and how far it matters if he is are nice problems in the ethics of popular education He at least gets plenty of opportunity of hearing both sides of the argument, even if the argument is a bad one and it is unlikely that Mr H C Wells's fervent materialism will do him any more harm than Sir Arthur Eddington's light-hearted theology In other respects he will be unquestionably the better for such books as *The Science of Life* or *The Nature of the Physical World* which after all were not primarily written to teach him philosophy but to reveal to him some of the wonders of modern discovery

A NATIONAL FOOD POLICY

IN his broadcast last week the Minister of Health described the report of the Advisory Committee on Nutrition as the most valuable document on the subject yet issued and went on to set out the action he had already taken on it. He had he said that day communicated with all the maternity and child welfare authorities in the country asking them to review their arrangements for the supply of milk and other protective foods to mothers and young children. He deprecated the time limits placed on the supply of milk to expectant mothers and young children and suggested as a simple criterion the supply of sufficient milk or other food whenever the provision is necessary for the maintenance of the health of the mother or young child. He had asked local authorities to review the scales of income at present in force and to frame them in such a way as not to render it difficult for mothers to take advantage of the authorities' arrangements. Wherever possible the milk supply should be efficiently pasteurised and where this was not practicable the medical officer of health should approve the source and quality of the milk supply. He regretted the abandonment in various places of the organised system of supplying meals because of the difficulty in securing the attendance of sufficient mothers or young children and expressed a hope that the successful solution of the difficulty in certain large towns would be more widely followed. The new Act raising the block grants to local authorities and redistributing the grants so as to give a larger share to authorities who need was greatest should he thought, help to do away with local hesitation on grounds of financial stringency. Existing services deserved to be more widely known and he emphasised the share which the Ministry is taking in the autumn campaign to make the services better known and more fully

availed of. Finally he offered to discuss with representatives or officers of the local authority any difficulties in the way of a fuller realisation of the committee's recommendations.

WHAT IS OSTEOPATHY?

OSTEOPATHY began as and still is, an American cult. The founder of the faith Andrew Taylor Still was a remarkable man born in Virginia in 1828 and in 1874 the recipient according to his own account of a divine revelation of the true science of healing which he called osteopathy. What is osteopathy? Two doctors Charles Hill and H. A. Clegg have tried to answer this and relevant questions in a most readable book.¹ The authors are perhaps biased: they are doctors. Yet seeing that osteopathy deals with human disease and doctors are the only class in the community who can lay claim to having studied the subject scientifically that is no drawback and the fact that neither of the authors is engaged in medical practice ensures that their bias if it exists is not due to fear of direct professional rivalry. Their positions in the British Medical Association gave them a broad outlook on medicine and a benevolently critical attitude towards their brethren and in addition to a scientific training, they have developed a more than usually wide knowledge of the public and legal aspects of the healing art. It is not their fault that the reader will find a certain amount of confusion when he comes to the part of the book where they try to give a description of the cult: for Hill and Clegg are in the same predicament as an artist trying to produce a picture of a versatile chameleon: the beast changes colour while you look at it. In the history of disease there has been a progressive unfolding of the truth and even a revolutionary discovery in connexion with a particular disease is found sooner or later to harmonise with such earlier knowledge as existed. But osteopathy like the chameleon appears to change colour for protective reasons. Still believed that all disease could be ascribed to displacements of the spine ribs or hips. One would imagine that he would have hailed the advent of X rays with shouts of joy. Not a bit of it: no concerted attempt was made to employ the new diagnostic weapon and when it was found that osteopathic displacements could not be demonstrated radiographically and that easily demonstrable displacements of the spine and hips did not lead to other more remote diseases as the osteopaths taught the osteopathic lesion was born something much more subtle and elusive to replace the discredited displacement. It is a remarkable and instructive fact that this nebulous lesion found its way recently into the august session of our House of Lords. A Bill for the registration of osteopaths was introduced in 1935 and after attaining a second reading was referred to a Select Committee. Although the subsequent investigation was expensive and time consuming the resulting exposure of the osteopaths has done nothing but good. Dr Hill and Dr Clegg allow the committee a report to speak for itself: it shows condemnation. This for example: The only existing establishment in this country for the education and examination of osteopaths was exposed in the course of evidence before us as being of negligible importance inefficient for its purpose and above all in thoroughly dishonest hands. Throughout the book, indeed the evidence has been

¹ *What is Osteopathy?* by Dr Charles Hill and Dr H. A. Clegg. London: J. A. H. & Sons, 1937. Pp. 217. 1s. 6d.

arranged with great precision, and the whole story is told clearly and with engaging good humour.

A point remains for consideration. The fact that osteopathy reached the House of Lords was due to one thing—certain noble lords had been cured by osteopaths, where, presumably, the doctors had failed. This side of the question is examined, but one is left with the impression that manipulation of the spine (which in certain cases that drift to the osteopath cannot fail to do good) as well as of other joints is being regularly employed in suitable cases by members of the medical profession. Yet too often still one meets a patient who visited the bone setter or the osteopath after one or more doctors had failed to relieve him, and who was cured. This is not the place to discuss the teaching of manipulative surgery (perhaps the authors considered it outside the scope of their book), but this important subject certainly has a claim to more attention from medical students than, for various reasons, it now receives.

A DIRECTORY OF LONDON MUNICIPAL HOSPITALS

THE county of London having settled down to another three years of hospital administration undisturbed by thoughts of election, it is useful to have for reference a handbook¹ prepared by its hospitals and medical services committee. This committee is responsible for 65 general and special hospitals, a small pox receiving station, and 9 institutions containing at the present time beds for sick, healthy, and infirm inmates. The hospitals are classified as 27 general, 1 for the chronic sick, 15 infectious, 6 children's (sick and convalescent), 10 tuberculosis (including 4 for children only), 2 adult convalescent, 2 epileptic, 1 for ophthalmia neonatorum and vulvo vaginitis in children, and 1 for maternity cases associated with venereal disease. They contain some 38,500 beds, and the handbook gives concise information about them all under six headings, including an admirable hospital map of the county. Primarily the information is for the use of the managing committees, whose names and time of meeting are set out for each hospital, but there is a much wider circle which will welcome such a conspectus of the hospitals as a whole, with precise information about access, number of beds, particular kind of work done with alterations in progress or proposed, and the names and qualifications of heads of departments. On p. 90 of the handbook is an imposing list of the special units at the L.C.C. general hospitals of which further details will be found on p. 893 of our present issue.

ROCKEFELLER TRAVELLING FELLOWSHIPS

THE Medical Research Council announce that they have been entrusted by the Rockefeller Foundation of New York with £3000 annually, for three years in the first instance, for the award of travelling fellowships in medicine to candidates in the United Kingdom. This generous benefaction renews an arrangement which had been highly successful during an earlier period but which had latterly been interrupted during a revision of the Foundation's general policy. These Rockefeller fellowships are intended for graduates who have had some training in research work in clinical medicine or surgery or in some other branch of medical science, and are likely to profit by a period of work at a chosen centre

in the United States or elsewhere abroad before taking up positions for higher teaching or research in this country. Five or six fellowships will be available annually, and applications for the academic year 1937-38 will be invited in May. It is of interest to recall an analysis which was made, at the end of the previous ten year period, of the positions occupied by the 70 men and women who had completed their tenure of Rockefeller fellowships awarded by the Council. This showed that 12 were professors in universities, that 36 others occupied whole time positions for teaching and research, and that a further 16 held part-time appointments of the same kind.

FOOD AND EXERCISE

MANY people little disposed to listen to discussion of the principles governing nutrition or the best means of promoting physical culture take a lively interest in talk of food and exercise. Lord Horder was wise, therefore, in using concrete example and homely simile in a survey¹ introductory to a series entitled "Towards National Health" to be broadcast on Monday evenings during April, May, and June. Proper food, decent shelter, ample fresh air, a chance of doing work, a reasonable amount of leisure, and room for play—these, Lord Horder declared, are the means of health, and governments, central and local, can see to it that no section of the community lacks them. He dismissed the man who talks about the "secrets of good health" as either a crank or one who has something to sell, and showed how easily science can be prostituted to business ends. On the other hand, health is more than a balanced resistance to stresses. It implies the possession of some kind of purpose or passion, be it a lofty one or a low one. Lord Horder's conviction of the need for fostering zest for life if health is to be maintained led him to plead for exercise without exercise, though he does not minimise the value of sergeants and instructors in correcting faults of posture or gait. Just as natural and appetising foods are better for us than artificial and doctored foods, so, he holds, natural and enjoyable forms of exercise are better for us in every way than drill and physical jerks.

Future talks will be concerned with various aspects of nutrition and on May 24th they will be linked to a second part of the series by an account of the relation of physical culture to nutrition and to other aspects of national health.

¹ *The Listener* April 7th 1937 p. 655

UNIVERSITY COLLEGE HOSPITAL, LONDON.—It was announced at the annual meeting of governors of this hospital that all the new extensions were in full working order and almost all the pay beds occupied. The centenary appeal made in 1935 for £300,000 has now reached £102,839. The number of patients is increasing and general accounts show a deficit of over £5000, which will probably be increased by the burden of interest charged in connexion with the private patients' wing. Special efforts are being made to facilitate the admission of emergency cases.

EASTBOURNE EAR, NOSE, AND THROAT HOSPITAL.—The Marquess of Hartington was elected president of this hospital at the annual meeting on March 24th, in succession to the late Sir John Maitland. Legacies and gifts strengthened the financial position during 1936, and as the number of patients was increasing year by year—706 in patients and 2178 out patients had been treated during the last twelve months—it was hinted that the governors were contemplating the erection of a hospital on two floors in a quieter neighbourhood.

¹ London County Council. *A Handbook of General and Special Hospitals and Ancillary Services*. 1936. London: King and Son. No. 3245. 1p. 16s. 1s. 6d.

PRINCIPLES OF MEDICAL STATISTICS

XV—GENERAL SUMMARY AND CONCLUSIONS*

In the preceding sections I have endeavoured to make clear to the non-mathematically inclined worker some of the technique that the statistician employs in presenting and in interpreting figures. The major part of that discussion has been directed to two basic problems:—

(1) The *significance* or *reliability* in the narrow sense, of a difference which has been observed between two sets of figures—be those figures averages, measures of variability, proportions or distributions over a series of groups; and

(2) The *inferences* that can be drawn from a difference which we are satisfied is not likely to be due to chance.

A Secure Foundation for Argument

The discussion of the first problem led to the development of tests of significance—the standard errors of individual values, the standard errors of the differences between values, and the χ^2 test. The object of such tests is to prevent arguments being built up on a foundation that is insecure owing to the inevitable presence of sampling errors. Medical literature is full of instances of the neglect of this elementary precaution. Illustration is hardly necessary but I may perhaps give a quotation from an article published while I was preparing this section for the press: a mere list of the treatments which have been tried in thrombo-angitis obliterans would be of formidable length and there is little point in mentioning many of them—they have only too often fallen by the way after an introduction more optimistic than warranted by results (*Lancet* 1937 i 551). This general summary may well be written round that problem of clinical trials.

In general worker A who is at least careful enough to observe a control group reports after a short series of trials that a particular method of treatment gives him a greater proportion of successes than he secures with patients not given that treatment and that therefore this treatment should be adopted. Worker B sceptically or enthusiastically applies the same treatment to similar types of patients and has to report no such advantage. The application of the simple probability tests previously set out would have (or should have) convinced A that though his treatment may be valuable the result that he obtained might quite likely have been due to chance. He would consequently have been more guarded in his conclusions and stressed the limitations of his data.

If however the test satisfied worker A that the difference in reaction that he observed between his two groups was not likely to be due to chance then there comes the second and usually much more difficult problem. Were his two groups of patients really equivalent in all relevant characteristics except in their differentiation by mode of treatment? This question immediately emphasises the importance of the initial planning of clinical trials with some new treatment or procedure a point which was discussed in the first of these articles. The simple probability tests are not rules merely to be applied blindly at the end of an experiment whether that

* In sections IV and V I discuss the meaning and use of the standard deviation and the coefficient of correlation. I have been a bit slow to show how in practice these two statistical values are calculated. I propose to do this in two further sections which will follow this concluding summary.

experiment be well or badly carried out. Certainly they can tell us in either case whether certain observed results are likely or not likely to be due to chance—equally certainly they can tell us nothing beyond that. But if the trials are well planned then we can with reason infer that the significant difference observed between the groups is more likely to be due to the specific treatment than to any other factor for such other factors are likely to be equally present in both groups in the well planned test. If the trials are badly planned in the sense that the groups to be compared are allowed to differ in various important respects as well as in treatment then we can infer nothing whatever about the advantages of the specific treatment. The time to reach that very obvious conclusion is not at the end of the experiment when time and labour and money have been spent but before the experiment is embarked upon. To argue at the end of a badly planned experiment that the statistical method is not applicable is not reasonable. The statistical method (like any other method) must fail if it has to be applied to faulty material, but faulty material is often the product of a faulty experiment. Much thought in fact must be given to the devising of a good experiment of really effective clinical trials and the statistical aspect must be borne in mind from the start.

The Problems of Clinical Trials

With methods of treatment the main questions to be settled are usually these:—

(a) How can the patients be effectively allocated to the two groups which are to be compared—which we can refer to as the treated and control groups?

(b) What criterion or criteria can be used as evidence of the effects of treatment?

(c) On how many patients will the trials have to be made to give reliable results?

The answers to these questions will naturally vary with the particular case at issue but there may be some advantage in discussing them briefly in general.

(a) ALLOCATION TO GROUPS

By the allocation of patients to the two groups we want to ensure that these two groups are alike except in treatment. It was pointed out in the first section that this might be done with reasonably large numbers, by a random division of the patients, the first being given treatment A, the second being orthodoxly treated and serving as a control, the third being given treatment A, the fourth serving as control and so on, no departure from this rule being allowed. It was also pointed out that this method could be elaborated the groups being made equal in such well defined characteristics as age and sex and then randomly composed in other respects (and of course more than one form of treatment could be brought in). While the treatment to be tested has only an empirical basis—as it must have before it has been adequately tried out—there can be no serious moral objection to this procedure though practical difficulties of administration may well arise. On the other hand once there is evidence that one treatment gives better results than another (even though the evidence is slender) the moral problem becomes acute. One cannot treat human beings like laboratory animals and to withhold from a patient a treatment which is likely to benefit him is impossible. All the more important therefore is it to secure reliable evidence of the effects of a form of treatment before that

position arises. In the early days of a new treatment there are also likely to be some workers who regard it favourably, and others who distrust it. If a random division of patients is objected to, or is administratively impossible, it should be possible at this stage to make comparisons between similar types of patients to whom worker A is giving the treatment and worker B is not. For example, in the treatment of pulmonary tuberculosis by collapse therapy there are physicians who now believe that an artificial pneumothorax should be induced at an early stage, there must have been, and no doubt still are, many patients of similar types to whom that treatment has not been applied, who would serve as an effective standard of comparison. The difficulty is that usually any one worker's field of observation is too limited to give a convincing result, while a prolonged period of observation of each patient is also a necessity and difficult to secure. Organisation is required so that patients may be classified on a uniform system, and the results collated and judged by identical criteria. In the long run it is probable that useless forms of treatment will be discarded and the good will survive, but it may be an unfortunately long run which carefully controlled trials would have effectively shortened.

The advantage of recording limited data—Even the smallest amount of data has its advantage, if collected on some uniform system and clearly defined. In some instances it is only by the accumulation of such data that an answer to a problem can be reached. For example, there is some evidence that epidemics of milk-borne and water-borne enteric fever differ in the sex- and age-incidence of the persons attacked, the former attacking women and children—the larger consumers of milk—with proportionately greater frequency. The problem cannot be settled by the evidence from any one epidemic; it requires the accumulation of data from a series of epidemics of the two types. The field of observation of any one worker is insufficient, but if uniform data of the sex and age of patients are systematically collected and published reliable evidence will eventually be reached.

The problem of classification—In that particular instance the criteria for classification of patients, namely, age and sex, are simple, in grouping types of patients, given or not given a specific form of treatment, the task may be very much more difficult. No purely objective criteria may be available and subjective factors, variable from one worker to another, may enter in—for instance in classifying patients with cancer or pulmonary tuberculosis to the stage of disease. Can any system in each case be devised which with any worker ensures that like is being put with like, at least in broad categories? It is often said that it cannot be done, that particular problems are not susceptible to statistical analysis because patients cannot be efficiently classified before and after treatment. It is true that there are sometimes very serious difficulties in making such objective classifications but these difficulties must be faced if the problem is important. Can a clear cut answer be reached in any other way to the fundamental questions "is this treatment of value, of how great a value, and with what types of patients?" In the large majority of cases it is difficult to see how it can. Even if the treatment is not of general value but of apparently great benefit in relatively rare isolated cases, satisfactory evidence of that must lie in statistics—viz., that such recoveries (however rare) do not occur with equal frequency amongst equivalent persons not given that treatment. Sooner or later the case is invariably based upon that

kind of evidence, but in the absence of planned trials it is often later rather than sooner. If it be maintained merely in general terms that a particular type of patient fares much better under such and such a form of treatment, then two queries arise. If the patient can be thus defined as of this particular type why cannot he be classified and compared with the patients of similar type not specifically treated? To reach the conclusion that he has benefited from treatment he must have been compared at least mentally with his untreated prototype, and the conclusion is itself based upon statistical though unrecorded evidence. The difficulty does not seem to lie, in that case, in classifying (for the clinician has done that in drawing his conclusion) but rather in the small field of observation of any one worker and in the lack of organised trials in the earlier days of a form of treatment. It may of course be said with truth that no two patients are alike in all respects, but if that is a logical objection to classifications it is equally a logical objection to treating any patient on the basis of past experience. In medical statistics, moreover, we are not usually comparing the reactions of individuals but of broadly similar groups of individuals, and in comparing randomly chosen groups, or groups representative of a type, we can reasonably presume, if the groups are fairly large, that the distribution of unknown characters which may influence the issue is likely to be equivalent.

(b) ASSESSMENT OF THE RESULTS OF TREATMENT

The second query that arises from our general statement is *how much better* do the patients fare under the particular form of treatment? How can the advantage be qualitatively or quantitatively assessed? For that purpose the criterion of success or failure must be defined, and clearly the more objective it can be made the better it will be. The criterion must, of course, vary with the problem. It is useless to use the survival rate as an index with a disease that has an extremely low fatality rate. Speed of recovery may be an appropriate test in one case, incidence of complications in another, absence of remission in a third, structural change in yet another, and so on. The choice of criterion and the way in which it is to be measured or defined are inherent in the question at issue and an essential part of the planning of the experiment, the clinical trials, or whatever is under discussion. The way in which it is to be recorded, the means of securing uniformity if different workers are involved, and the steps to be taken to avoid the omission of necessary items of information, must all enter into this plan in its initial stages. Team work is often requisite and in that team I suggest (at the risk of being accused of over-emphasising the importance of my own subject) the medical statistician ought to be represented. His inclusion should have two advantages. He should be able to advise on the statistical aspects of the inquiry at its inception, and secondly, and equally important, he will learn at the start the details of the problem, the difficulties of solving it, and the factors that may complicate it. If his task is only to come in at the end, merely to make a technical analysis, he may be faced not only with material that is not capable of answering the questions posed but also with material which he may imperfectly understand, having had no previous association with it, and therefore be liable to misinterpret.

(c) THE NUMBERS REQUIRED

Finally a question very frequently put to the statistician relates to the size of the sample that is

necessary to give a reliable result. To that there is usually no simple answer. If two groups are to be compared a treated and a control group then the size of the sample necessary to 'prove the case' must depend upon the magnitude of the difference that ensues.

If to take a hypothetical example the fatality rate (or any other selected measure) is 40 per cent in the control group and 20 per cent in the treated group then by the ordinary test of significance of the difference between two proportions, that difference would be more than is likely to occur by chance with 42 patients in each group (taking twice the standard error as the level). In other words with those fatality rates we should have to take at least 42 patients in each group to feel at all confident in our results. If there were 50 patients in each group and 20 died in the control group and 10 in the specially treated group that difference is (on the criterion of significance adopted) more than would be likely to occur by chance. If on the other hand the improvement was a reduction of the fatality rate from 40 to 30 per cent we should need at least 182 patients in each group. If we had 200 in each group and 80 died in the one and 60 in the other that difference is more than would be likely to occur by chance. Finally if the fatality rate was only 4 per cent in the control group and 2 per cent in the treated group we should require as many as 600 patients in each group to be able to dismiss chance as a likely explanation. With that number in each group there would be 24 and 12 deaths and a difference of this order on smaller numbers might well be due to chance. (In such a case the fatality-rate of course might not be the best measure of the advantages of the treatment.)

The determination of the numbers required is based it will be noted, upon the difference observed between the groups. In practice we often do not know what that difference is likely to be until at least some trials have been made. There can be no answer given in advance to the question how many observations must be made. Unless there is some indication from past experience as to the kind of difference that may result, or unless we can argue on a priori grounds we must confess ignorance of the numbers required to give a convincing result.

Common Sense and Figures

Apart from these problems of the errors of sampling much of my discussion of the interpretation of figures has centred it will have been noted not so much on technical methods of analysis but on the application of common sense to figures and on elementary rules of logic. The common errors discussed in previous sections are not due to an absence of knowledge of specialised statistical methods or of mathematical training but usually to the tendency of workers to accept figures at their face value without considering closely the various factors influencing them—without asking themselves at every turn what is at the back of those figures? what factors may be responsible for this value? in what possible ways could these differences have arisen? That is constantly the crux of the matter. Group A is compared with Group B and a difference in some characteristic is observed. It is known that Group A differed from Group B in one particular way—e.g. in treatment. It is therefore concluded too readily that the difference observed is the result of the treatment. To reject that conclusion in the absence of a full discussion of the data is not merely an example of armchair criticism or of the unbounded scepticism of the statistician. Where as in all statistical work our results may be due to more than one influence there can be no excuse for ignoring that fact. And

it has been said with truth that the more anxious we are to prove that a difference between groups is the result of some particular action we have taken or observed the more exhaustive should be our search for an alternative and equally reasonable explanation of how that difference has arisen.

It is also clearly necessary to avoid the reaction to statistics which leads an author to give only the simplest statement of his figures on the grounds that they are dull matters to be passed over as rapidly as possible. They may be dull—often the fault lies in the author rather than in his data—but if they are cogent to the thesis that is being argued they must inevitably be discussed fully by the author and considered carefully by the reader. If they are not cogent then there is no case for producing them at all. In both clinical and preventive medicine and in much laboratory work we cannot escape from the conclusion that they are frequently cogent that many of the problems we wish to solve are statistical and that there is no way of dealing with them except by the statistical method.

A B H

AN ORTHOPÆDIC NURSING CERTIFICATE

THERE are at the present time in this country some thirty orthopaedic hospitals most of which issue certificates of proficiency to their nursing staff on completion of their training. These certificates lack uniformity and offer no accepted standard when applications for other posts are being considered. The Central Council for the Care of Cripples which since its inauguration in 1920 has acted as a coordinating body in matters concerning the welfare of cripples now proposes an orthopaedic nursing certificate based on a uniform syllabus. In consultation with the principal orthopaedic hospitals a scheme for such a certificate has been drawn up and the rules and syllabus have been issued in pamphlet form¹ by the Council. The certificate will be awarded as the result of tests held at the end of the first and second years of training respectively but probationer nurses who have passed the preliminary State examination will be exempt from the earlier test. The first which includes anatomy physiology hygiene and practical nursing both written and oral will be taken at the training hospital in May or November. The second test on orthopaedic conditions and their nursing will be taken partly at the hospital but for the practical and oral portion examinees will generally be asked to attend at a centre—London Bristol Newcastle or Birmingham—again in May or November. General State registered nurses will be allowed to sit for the final examination at the end of one year's training. The entrance fee will be 10s. 6d. for the first test and one guinea for the second. There are five orthopaedic surgeons on the executive committee of the Central Council one of whom Mr L. S. Evans has acted as chairman of the subcommittee which drew up the scheme. Dame Agnes Hunt who is president of the Council expresses the hope that every orthopaedic hospital which offers training to probationers will adopt the certificate so that its possession may be generally accepted as evidence of sound training in the elements of orthopaedic nursing. It is proposed to hold the first examination in November 1937.

¹ From the Secretary of the Council, 31 Euston-square, London, N.W.1. d. post free.

SPECIAL ARTICLES

MICRO-CHEMICAL METHODS OF
BLOOD ANALYSIS

By E J KING, M.A., Ph.D. Toronto

READER IN PATHOLOGICAL CHEMISTRY IN THE UNIVERSITY OF
LONDON AT THE BRITISH POSTGRADUATE MEDICAL SCHOOL

G A D HASLEWOOD, M.Sc., Ph.D. Lond

ASSISTANT IN PATHOLOGICAL CHEMISTRY AT THE SCHOOL AND

G E DELORY, B.Sc. Lond

LABORATORY ASSISTANT IN PATHOLOGICAL CHEMISTRY
AT THE SCHOOL

THE methods of blood analysis here described have proved their usefulness in research and routine laboratory work. Some of the methods are modifications of published procedures, while others are new

A—PROCEDURES FOR WHOLE BLOOD

Micro chemical methods of blood analysis are particularly useful in investigations which require the taking of frequent samples of blood. Determinations on capillary blood, as compared with venous blood, are less inconvenient to the patient, who usually objects to numerous and elaborate veni punctures, and are less laborious for the investigator. A puncturing apparatus or a Hagedorn needle, together with a supply of capillary blood pipettes, is much easier to keep and to use than a supply of sterilised syringes and needles.

The accuracy of the micro methods is usually beyond question, and biochemical methods carried out on small quantities of capillary blood have given at least as consistent and as accurate results as the larger scale procedures from which they usually sprang. The advantage of being able to omit any anti coagulant substance in the taking of the sample needs no comment. The sample can be measured in most capillary blood pipettes with a high degree of precision, and the possibility of obtaining abnormal proportions of cells and plasma when sampling an improperly mixed specimen of venous blood (a potent source of error not often appreciated) is avoided.

The level of some substances in arterial blood is different and of greater physiological significance than the level in venous blood. This is notably so in the case of glucose. Arterial blood glucose is best estimated in capillary blood, which gives the same value.

The micro methods described have been developed primarily for use with capillary blood, but they are of course applicable to samples of venous blood.

TAKING OF BLOOD

Blood may be taken from a puncture on the ear or finger, but the most convenient place to obtain capillary blood is probably from the thumb over the bed of the nail. The part is wiped clean with a little ether or spirit and a stab of 1 to 2 mm deep is made by means of a puncturing apparatus or Hagedorn needle. A piece of soft rubber tubing or of gauze is wrapped fairly tightly about the thumb above the knuckle. On flexing the thumb a free flow of blood is usually obtained. If the blood does not come easily the rubber is released and the hand shaken in a downwards direction. This operation will ensure an adequate amount of blood when the tourniquet is

replaced and the thumb flexed. The pipette is held horizontally with its point in the drop of blood issuing from the stab wound. The blood is allowed to run in exactly to the 0.2 c cm mark. The pipette is then wiped, and the blood allowed to run into a 15 c cm conical centrifuge tube containing water or isotonic sodium sulphate solution, and by alternate blowing and sucking the pipette is washed several times with the solution.

I—Estimation of Urea in Blood

Urea represents about 50 per cent of the non protein nitrogen of the blood. Normally there are between 20 and 40 mg of urea present per 100 c cm. High values are found in conditions associated with impaired renal function—particularly in chronic nephritis, but also in some cases of acute nephritis, prostatic obstruction, cardiac failure, &c.*

PRINCIPLE

The sample of blood is digested with urease, and the urea thus converted into ammonia. After removal of proteins, the colour produced by the ammonia with Nessler's reagent is compared colorimetrically with the colour produced under the same conditions with a standard ammonium chloride solution.

Direct nesslerisation does not lead to the production of cloudiness in the case of protein free filtrates from unlaked blood. This is due to the fact that the sulphhydryl substances glutathione and ergothione, which produce turbidities with Nessler's reagent because of the insolubility of their mercury salts, are confined to the cells and do not appear in the filtrate, as is the case with filtrates of laked blood. Filtrates of unlaked blood have the further advantage that no ammonia is contributed to the determination through the action of the arginase of the red cell on the arginine contained in most commercial preparations of urease (see Addis 1928). The use of zinc hydroxide as deproteinising reagent eliminates a small amount of turbidity producing substance contributed by most preparations of urease.

METHOD

0.2 c cm of blood is added to a centrifuge tube containing 3.2 c cm of isotonic sodium sulphate solution.

A "knife point" (about 20 mg) of Jack Bean meal is added, and the whole stoppered with a rubber bung, mixed, and incubated at 37° C for 20 minutes. 0.3 c cm of zinc sulphate solution and 0.3 c cm of 0.5 N sodium hydroxide are added to precipitate the proteins, and the mixture is centrifuged. 2 c cm of the supernatant fluid represent 0.1 c cm of blood.

2 c cm of the clear supernatant are treated with 5 c cm of water and 1 c cm of Nessler's reagent. The solution is compared in a colorimeter† with a "high" or "low" standard made up with 2 c cm or 5 c cm of the standard ammonium chloride solution (0.01 mg of nitrogen per c cm), 5 c cm

* No attempt is made to give a complete statement of the amounts of the various substances present in diseased conditions nor to discuss their significance. Brief mention is made only of those clinical conditions in which abnormal values are most commonly encountered.

† A micro-colorimeter or micro attachments (cups and plungers) for an ordinary Duboscq are necessary for this and other colorimetric procedures. Micro-cups and plungers can now be obtained as interchangeable attachments for almost all the makes of colorimeters commonly in use.

or 2 c.cm respectively of water and 1 c.cm. of Nessler's reagent. The colorimetric comparison is facilitated by the use of a blue light filter (see section C)

CALCULATION

(1) Low standard

$$\text{Blood urea} \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.02 \times \frac{100}{0.1} \times 14 \\ - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 43.8 \end{array} \right.$$

(2) High standard

$$\text{Blood urea} \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.05 \times \frac{100}{0.1} \times 2.14 \\ - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 107 \end{array} \right.$$

N.B.—1 mg of nitrogen = 2.14 mg of urea.
mg/100 c.cm blood

SOLUTIONS

Nessler's reagent—As described in Peters and Van Slyke's *Quantitative Clinical Chemistry* Baltimore 1932, vol II p 532 and in Beaumont and Dodds's *Recent Advances in Medicine* 8th ed., London 1936 p 391

Standard ammonium chloride solution (containing 0.01 mg of nitrogen per c.cm.)—163 mg of pure ammonium chloride are weighed out and dissolved in water. The volume is made up to 100 c.cm. 25 c.cm of this solution with 10 c.cm. of N sulphuric acid are diluted to 1 litre with distilled water

Isotonic sodium sulphate—30 g of crystalline sodium sulphate ($\text{Na}_2\text{SO}_4 \cdot 10 \text{H}_2\text{O}$) are dissolved in water and made to 1 litre

Zinc sulphate—10 g of crystalline zinc sulphate ($\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$) are dissolved in water and made to 100 c.cm.

II.—Estimation of Non Protein Nitrogen

The non protein nitrogen containing substances of blood are urea (10–20 mg N), uric acid (1–2 mg N) creatinine (0.5–1 mg N) amino acid nitrogen (0.8 mg N) and substances such as glutathione and ergothioneine (5–10 mg N per 100 c.cm of blood). The normal range of non protein nitrogen (N.P.N.) is from 25–40 mg per 100 c.cm. Increased values are found in the conditions showing a high blood urea

PRINCIPLE

The proteins of laked blood or plasma are precipitated by trichloroacetic acid. Part of the filtrate is digested with sulphuric acid until all the nitrogen is converted into ammonium sulphate. The ammonium salt is estimated colorimetrically with Nessler's solution excess of which is used for the test in order to neutralise the sulphuric acid and give an alkaline medium.

METHOD

0.2 c.cm of blood (or plasma) is pipetted into 3.2 c.cm of water or isotonic sodium sulphate solution. Proteins are precipitated by the addition of 0.6 c.cm of trichloroacetic acid. The tube is stoppered and thoroughly shaken. After five minutes the mixture is filtered.

1 c.cm of the filtrate (≈ 0.05 c.cm of blood or plasma) is evaporated in a test tube with 0.5 c.cm. of 30 per cent sulphuric acid until the liquid turns dark and white acid fumes are evolved. The cooled liquid is then treated with 1 drop of hydrogen peroxide (30–100 vols.) to destroy any coloured products and boiled for 4 minutes. To the cooled solution are now added 5 c.cm of water and 3 c.cm of Nessler's solution. The colour produced is compared in the colorimeter with the low or high standard used in the determination of blood urea.

CALCULATION

(1) Low standard:

$$\text{N.P.N.} \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.02 \times \frac{100}{0.05} \\ - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 40 \end{array} \right.$$

(2) High standard

$$\text{N.P.N.} \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.05 \times \frac{100}{0.05} \\ - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 100 \end{array} \right.$$

In mg/100 c.cm of blood or plasma

SOLUTIONS

Nessler's reagent and ammonium chloride standard as described for urea (A I)

Trichloroacetic acid—25 g are dissolved in water and made to 100 c.cm

30 per cent sulphuric acid—30 c.cm. concentrated acid are allowed to run slowly and with shaking into about 60 c.cm of distilled water in a 100 c.cm volumetric flask. The mixture is cooled to room temperature made to the mark, and mixed

III.—Estimation of Uric Acid in Blood

Uric acid is normally present to the extent of 2–4 mg per 100 c.cm of blood. In gout and in certain conditions of renal impairment high values are found

PRINCIPLE

Blood in isotonic sodium sulphate solution is treated with a phosphotungstic acid reagent. This precipitates the proteins and on addition of sodium cyanide to the supernatant liquid the excess of phosphotungstic acid reagent produces a blue colour with uric acid present. The colour is compared with that given by a standard solution of uric acid. The blood must not be laked as interfering substances such as glutathione and ergothioneine would be liberated from the cells

METHOD

0.2 c.cm of capillary blood is pipetted into 3.2 c.cm. of isotonic sodium sulphate in a 15 c.cm centrifuge tube. 0.6 c.cm of Folin's (1934) uric acid reagent is added. The tube is stoppered its contents mixed gently by inversion and immediately centrifuged. 2 c.cm of the supernatant liquid (≈ 0.1 c.cm of blood) are treated with 1 c.cm. of sodium cyanide urea reagent. At the same time a mixture of 1 c.cm. of the uric acid blood standard (≈ 0.004 mg uric acid) 0.7 c.cm of distilled water and 0.3 c.cm of Folin's reagent is treated also with 1 c.cm of sodium cyanide-urea reagent. The two tubes are placed in a boiling water bath for 5 minutes cooled and the solutions compared colorimetrically

CALCULATION

$$\text{Uric acid} \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.004 \times \frac{100}{0.1} \\ - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 4 \end{array} \right.$$

mg/100 c.cm of blood.

SOLUTIONS

Isotonic sodium sulphate as under blood urea (A I)

Sodium cyanide urea reagent—5 g of sodium cyanide and 20 g of urea are dissolved in water and the volume made to 100 c.cm. The urea prevents clouding during the determination

Folin's (1934) uric acid reagent—(1) Preparation of molybdate free sodium tungstate a solution of 2.0 g of sodium tungstate in 500 c.cm. of water is treated with 5 N hydrochloric acid until neutral to litmus paper. The

solution is saturated with hydrogen sulphide, and allowed to stand 24 hours. It is then treated with 400 c cm of absolute alcohol added gradually with constant shaking. The mixture after standing for a further 24 hours, is filtered and the precipitate washed with 50 per cent alcohol and dissolved in 375 c cm of water. 0.5 c cm of bromine is added, and the mixture boiled gently until the excess bromine is dispelled. Sodium hydroxide solution (40 g per 100 c cm) is now added to the hot solution until the latter is alkaline to phenolphthalein. The cooled solution filtered if necessary, is treated with 200 c cm of absolute alcohol, and allowed to stand for 24 hours. The white crystals are filtered off and dried in a desiccator.

(2) Preparation of reagent. 100 g of molybdate free sodium tungstate are treated gradually with a solution of 30 c cm of "syrupy" phosphoric acid (89 per cent) in 150 c cm of water. The mixture is boiled gently under reflux for 1 hour, decolorised as above with a drop of bromine, cooled and diluted to 500 c cm.

Stock uric acid standard (Folin) ($\equiv 1$ mg per c cm) — 1 g of uric acid is placed in a 1 litre flask. 0.6 g of lithium carbonate is dissolved in 150 c cm of cold water. The carbonate solution, filtered if necessary and warmed to 60° C, is added to the flask containing the uric acid, which is warmed under the hot tap. The warm mixture is shaken for five minutes, cooled at once under the tap, and treated with 20 c cm of formalin (40 per cent solution of formaldehyde) and enough water to fill half the flask. A few drops of methyl orange are added, and then gradually with shaking, 25 c cm of N sulphuric acid. The solution should turn pink when 2–3 c cm of acid remain to be added. The mixture is now diluted to 1 litre, mixed and stored in the dark in a stoppered bottle, when it will keep almost indefinitely.

Uric acid "blood" standard ($\equiv 0.004$ mg per c cm) — 2 c cm of the above "stock" standard solution are diluted with water and 1 c cm of 40 per cent formalin to 500 c cm. This solution should be made up fortnightly.

IV—Creatinine in Blood

PRINCIPLE

Creatinine gives a red colour with alkaline solutions of picric acid (Jaffe's reaction). A similar colour is also given by blood (and plasma) filtrates. It is not certain that the colour in this case is due to creatinine, but the substance which may thus be estimated as blood "creatinine" is of some clinical importance. Calculated as "creatinine" the normal values are 1–2 mg per 100 c cm of blood. In advanced renal failure enhanced values may be found.

METHOD

0.2 c cm of blood is added to 1.4 c cm of isotonic sodium sulphate solution. 0.2 c cm of zinc sulphate solution and 0.2 c cm of 0.5 N sodium hydroxide are added and the tube is stoppered and shaken. The mixture is centrifuged, and 1 c cm of the clear supernatant fluid ($\equiv 0.1$ c cm of blood) is used as "test" solution (see Somogyi 1930).

For normal blood a "standard" solution is made by diluting 1 c cm of the creatinine "blood" standard described below, with 4 c cm of water. The "test" solution and 1 c cm ($\equiv 0.001$ mg of creatinine) of this "standard" solution are then treated at the same time with 0.5 c cm of freshly made alkaline picrate solution (see below). After not more than 15 minutes the solutions are compared in the colorimeter, using a blue green light filter, such as Ilford's spectrum blue green (see section C).

CALCULATION

$$\text{Blood creatinine} \cdot \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.001 \times \frac{100}{0.1} \\ - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 1.0 \end{array} \right. \\ \text{mg per 100 c cm blood}$$

In cases where a raised blood "creatinine" is found or expected, stronger "standards" may be made by using larger quantities of the "blood standard," and diluting these as before to 5 c cm with water. In general the calculation becomes —

$$\text{Blood creatinine} \cdot \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} \times C \times 0.001 \times \frac{100}{0.1} \end{array} \right.$$

where C is the number of c cm of "blood" standard used in the 5 c cm of "standard" solution.

Preparation of solutions — Isotonic sodium sulphate, 10 per cent zinc sulphate, and 0.5 N sodium hydroxide as under blood urea (A I).

Creatinine "stock" standard (containing 1 mg of creatinine per c cm) — 1.602 g of pure creatinine zinc chloride are dissolved in N/10 hydrochloric acid solution and the volume made up with the N/10 acid to 1 litre.

Creatinine "blood" standard (0.005 mg per c cm) — 5 c cm of the above "stock" standard are treated with 10 c cm of N/10 hydrochloric acid and the volume made up with water to 1 litre.

Alkaline picrate solution — Five parts (by volume) of a saturated aqueous solution of pure picric acid, containing about 15 g picric acid per litre are mixed with 1 part (by volume) of 10 per cent sodium hydroxide.

Note — The picric acid may be purified by recrystallisation from glacial acetic acid. It must be of such purity that when 10 c cm of a saturated aqueous solution are treated with 5 c cm of the 10 per cent hydroxide, the colour (determined in the colorimeter) of the alkaline mixture so formed is not more than twice as deep as that of the saturated picric acid solution.

V—Inorganic Phosphate

The blood of normal adult persons contains 2–3 mg per 100 c cm (expressed as P) of inorganic phosphate. In conditions involving an acidosis, such as is often found in nephritis, the amount present may be definitely raised. The amount of phosphate present in the blood of children, where bone formation is not yet complete, is at a higher level—usually of about 5 mg per 100 c cm. In rachitic conditions the figure is lowered.

PRINCIPLE

The inorganic phosphate of a deproteinised filtrate of the blood is coupled with molybdate, and the yellow phospho molybdate is reduced to give a blue substance. The amount of blue colour produced in the solution is directly proportional to the amount of phosphate present.

METHOD

0.2 c cm of whole blood or plasma is pipetted into 3.2 c cm of water or isotonic sodium sulphate and treated with 0.6 c cm of 25 per cent trichloroacetic acid. The mixture is shaken well, and after 5 minutes filtered through a small paper. 2 c cm of the clear filtrate ($\equiv 0.1$ c cm of blood or plasma) are treated at the same time as 2 c cm of the dilute standard phosphate solution ($\equiv 0.004$ mg P) with 0.3 c cm of the ammonium molybdate solution followed by 0.2 c cm of the reducing agent (ammonium naphtholsulphonic acid). The contents of the tubes are gently shaken between each addition, and the colours are read after 10 minutes in a colorimeter (King 1932).

CALCULATION

$$\text{Blood phosphate} \cdot \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.004 \times \frac{100}{0.1} \\ - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 4 \end{array} \right. \\ \text{mg P/100 c cm of blood}$$

SOLUTIONS

Trichloroacetic acid solution — As under non protein nitrogen (A II).

Ammonium molybdate — 5 g of ammonium molybdate are added to a mixture of 75 c cm distilled water and

15 c.cm. of concentrated sulphuric acid in a 100 c.cm. volumetric flask. The mixture is shaken until dissolution is complete and cooled to room temperature. The solution is then made up to 100 c.cm. and mixed.

Reducing agent—0.2 per cent. aminonaphtholsulphonic acid. 0.2 g. of the 1:2:4-acid 12 g. sodium metabisulphite and 2.4 g. crystalline sodium sulphite are dissolved by shaking with enough water to make 100 c.cm. If the solution does not filter clear it should be left overnight and filtered again. A fresh solution should be prepared every two weeks.

Standard phosphate—A stock solution is made by dissolving 2.194 g. of pure potassium dihydrogen phosphate (KH_2PO_4) in 500 c.cm. in water. This solution contains 1 mg. P per c.cm. A dilute standard solution is made by diluting 2 c.cm. of the stock solution to 1 litre with water. 1 c.cm. of this solution contains 0.002 mg. P. Both solutions should be kept saturated with chloroform to prevent any bacterial growth which might cause a loss of inorganic phosphate.

VI—Cholesterol in Blood

Total cholesterol in the blood of normal persons may be present in amounts varying from 120 to 230 mg. per 100 c.cm. The amounts present in blood may be raised in severe diabetic biliary obstruction and in some forms of nephritis (particularly the nephrotic type). Low values are found in severe anæmia.

The method recommended is that described in detail by Sackett (1925).

VII—Glucose

Harding's (1932, 1933) modification of the Schaffer-Hartmann method. This method gives true sugar values as opposed to total reducing substances when applied to filtrates of unclotted blood.

PRINCIPLE

The sugar in whole blood is a mixture of glucose present mainly in the plasma and nitrogenous reducing compounds (chiefly glutathione) in the corpuscles. It is possible to exclude the corpuscles by mixing the blood with isotonic sodium sulphate solution in which the corpuscles remain intact. A determination of the reducing power then becomes equivalent to an estimation of glucose alone. For normal (fasting) individuals values of 85–90 mg. per 100 c.cm. are found.

METHOD

0.2 c.cm. of blood is added to 3.2 c.cm. of isotonic sodium sulphate. After 4 minutes standing to allow diffusion from the cells 0.3 c.cm. of zinc sulphate solution and of 0.5 N sodium hydroxide are added. The mixture is shaken and then centrifuged.

2 c.cm. of the supernatant liquid (≈ 0.1 c.cm. of blood) are treated with 2 c.cm. of the mixed copper reagent in a wide (2 in.) test tube.

A blank is prepared with 2 c.cm. of distilled water and 2 c.cm. of reagent. Both tubes stoppered lightly with cotton wool are placed in a boiling water bath for exactly 10 minutes. They are then cooled at once under the tap. To each is added 2 c.cm. of 1 per cent. potassium iodide and 2 c.cm. of N sulphuric acid. After standing 1 minute the contents of each tube are titrated with $\frac{1}{200}$ sodium thiosulphate. One per cent. soluble starch (made up in water or better in saturated phenol red solution) is used as indicator. The titration figure of the test solution is subtracted from that of the blank.

† If the sugar determination cannot be made immediately it is advisable to keep the blood in an isotonic sodium sulphate containing fluoride in 1 M solution—see solution.

CALCULATION

1 c.cm. N/200 thiosulphate = 0.116 mg. glucose

The c.cm. of thiosulphate given by the difference between the blank and test titrations is equivalent to the amount of glucose present in the test. Hence—
c.cm. N/200 thiosulphate $\times$ 0.116 = mg. glucose in c.cm. filtrate (i.e. in 0.1 c.cm. blood)

And therefore—

$$\left. \begin{aligned} \text{c.cm. N/200 thiosulphate} \\ \times 0.116 \times \frac{100}{0.1} \end{aligned} \right\} = \text{mg. of glucose/100 c.cm. blood}$$

$$\text{i.e. c.cm. of N/200 thio} \left. \begin{aligned} \text{sulphate} \times 116 \end{aligned} \right\} = \text{mg. of glucose/100 c.cm. blood}$$

If the blood-sugar value thus obtained is greater than 400 mg./100 c.cm. the determination should be repeated using as test solution a mixture of 1 c.cm. of filtrate and 1 c.cm. of water. The result then obtained is multiplied by 2.

SOLUTIONS

Isotonic sodium sulphate containing fluoride and thymol to prevent glycolysis—100 mg. of sodium fluoride and 10 mg. of thymol are dissolved in 100 c.cm. of the 3 per cent. sodium sulphate 10 per cent. zinc sulphate and 0.5 N sodium hydroxide as for blood urea (A.I.).

Copper reagent—Solution A. 13 g. copper sulphate crystals are dissolved in water and the volume made up to 1 litre.

Solution B is made by dissolving: 24 g. Rochelle salt (sodium potassium tartrate) 40 g. anhydrous sodium carbonate 50 g. sodium bicarbonate 30.8 g. potassium oxalate and exactly 1.4 g. potassium iodate separately in the minimum quantities of water at room temperature. The solutions are then mixed and the volume made up to 1 litre.

The copper reagent is a freshly made mixture of exactly equal volumes of solutions A and B.

Note—Only purest analytical chemicals should be used in making up the above reagent. When preparing a fresh copper reagent it is advisable to check it against a solution of pure glucose.

B—PROCEDURES FOR PLASMA

I—Plasma Proteins

The total quantity of protein in blood plasma varies in normal individuals from approximately 6 to 8 g. per 100 c.cm. Plasma protein is divided into two main fractions, globulin and albumin. Globulin includes fibrinogen. Normally the approximate amounts of the proteins in plasma are albumin 3.4–4.0 g. per 100 c.cm. globulin (excluding fibrinogen) 1.5–3.0 g. per 100 c.cm. fibrinogen 0.2–0.4 g. per 100 c.cm. Where there is decrease of plasma protein—e.g. through proteinuria or malnutrition—the albumin is chiefly affected and there is often a reduction of the albumin globulin ratio (normally 1.3–4.0). A reduction of this kind is characteristic of nephrosis. An increase in the globulin especially fibrinogen may accompany inflammatory conditions.

PRINCIPLE

Oxalated plasma diluted with isotonic sodium chloride is used for estimation of total protein. Another portion of the diluted plasma is treated with calcium chloride and the fibrin clot removed. A further (fresh) sample of plasma is treated with saturated sodium sulphate solution which precipitates the globulin and the filtrate is used for estimation of albumin. For total protein and albumin the protein is precipitated with zinc sulphate and sodium hydroxide, the precipitates and the fibrin clot being then digested with sulphuric acid and hydrogen peroxide. The protein nitrogen is estimated

colorimetrically, as ammonium sulphate, with Nessler's solution. The nitrogen figures multiplied by 6.25 give the approximate protein values, which are expressed as grammes per 100 c cm of plasma.

METHOD

(A) *Total protein*—0.2 c cm of plasma (from oxalated blood) in a 10 c cm volumetric flask is diluted to 10 c cm with isotonic (0.9 g per 100 c cm) sodium chloride. 0.2 c cm of this solution ($\equiv 0.004$ c cm of plasma) is pipetted into 4 c cm of water in a Pyrex centrifuge tube. 0.1 c cm of zinc sulphate and 0.1 c cm of 0.5 N sodium hydroxide are added with mixing, and the precipitate is centrifuged down.

When the supernatant liquid has been carefully decanted, the inverted tube is drained on a filter paper. 0.5 c cm of 30 per cent sulphuric acid is added, together with a small piece of porous pot. The mixture is gently boiled until blackening occurs and white acid fumes appear. One drop of hydrogen peroxide (99–100 vols) is added to the cooled solution, and boiling continued for 4 minutes. To the cold colourless solution are added 5 c cm of water and 3 c cm of Nessler's solution. The colour is compared with a standard prepared from 5 c cm of the standard ammonium chloride solution (containing 0.01 mg of nitrogen per c cm), 2 c cm of water, and 1 c cm of Nessler's solution.

CALCULATION

$$\text{Total protein (A)} \cdot \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} > 0.05 \times \frac{100}{0.004} \times \frac{6.25}{1000} \\ - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 1.25 \times 6.25 \end{array} \right.$$

* g / 100 c cm of plasma

(B) *Fibrin*—To another 5 c cm ($\equiv 0.1$ c cm of plasma) of the solution of plasma in isotonic sodium chloride, placed in a narrow tube, is added 0.1 c cm of calcium chloride solution. The mixture is kept at 37° C until clotting occurs. The fibrin is carefully collected on a thin glass rod, pressed to remove liquid, washed with water, and dropped into a test tube for digestion. This, and also the colorimetric estimation, is carried out exactly as in the case of total protein.

CALCULATION

$$\text{Fibrin (B)} \cdot \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.05 \times \frac{100}{0.1} \times \frac{6.25}{1000} \\ - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.05 \times 6.25 \end{array} \right.$$

* g / 100 c cm of plasma

(C) "*Albumin*"—0.2 c cm of plasma is placed in a 5 c cm volumetric flask. The volume is made up to 5 c cm with a saturated solution of sodium sulphate. The mixture is kept at 37° C for 3 hours and is then filtered through a fine filter paper. 0.2 c cm of the filtrate ($\equiv 0.008$ c cm of plasma) is placed in 4 c cm of water in a Pyrex centrifuge tube and the protein precipitated with zinc sulphate and sodium hydroxide, drained, digested, and estimated as ammonium sulphate exactly as in the case of total protein.

CALCULATION

$$\text{Albumin (C)} \cdot \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.05 \times \frac{100}{0.008} \times \frac{6.25}{1000} \\ - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.625 \times 6.25 \end{array} \right.$$

* g / 100 c cm of plasma

D = Total protein - fibrin + albumin
 Globulin = A - (B + C)

Note—A blue filter may be used with advantage in this colorimetric comparison (see section C).

SOLUTIONS

Thirty per cent sulphuric acid, Nessler's reagent, and standard ammonium chloride as for urea and non protein nitrogen (A, I and II).

Calcium chloride—2.5 g per 100 c cm in water.

Saturated sodium sulphate—22.2 g of anhydrous sodium sulphate (Na_2SO_4) dissolved in warm water and made to 100 c cm. The solution is kept at about 37° C.

II—Bilirubin

Normal blood contains small amounts of the yellow pigment bilirubin. These quantities may be greatly increased in various types of jaundice.

PRINCIPLE

The plasma is treated with diazotised sulphanilic acid, with the addition of ammonium sulphate and alcohol to precipitate the protein. The red colour produced was originally compared colorimetrically against a standard solution of bilirubin, treated with diazotised sulphanilic acid. This is, however, difficult to obtain pure, and various artificial "permanent standards" have been devised. The most satisfactory is that containing methyl red (o carboxy benzene azo dimethylaniline—2.9 mg per litre at pH 4.63) in sodium acetate buffer. The colour of this solution accurately matches the colour obtained when 0.1 mg of bilirubin is treated with the diazo reagent in a final volume of 25 c cm.

METHOD

1 c cm of plasma is treated in a centrifuge tube with 0.5 c cm of diazo reagent, 0.5 c cm of saturated ammonium sulphate, and finally 3 c cm of absolute ethyl alcohol. The mixture is stoppered, thoroughly mixed, allowed to stand for a few minutes, and filtered. Under these conditions the dilution of the plasma closely approximates to 1 in 4, allowance being made for the volume of the precipitate and for the change in volume when alcohol is added to water. The colour of the clear filtrate is compared with the standard mentioned above ($\equiv 0.1$ mg of bilirubin in a volume of 25 c cm) (Haslewood and King 1937).

CALCULATION

$$\text{Bilirubin} \cdot \left\{ \begin{array}{l} - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 0.1 \times \frac{4}{25} \times \frac{100}{1} \\ - \frac{\text{Reading of standard}}{\text{Reading of test}} \times 1.6 \end{array} \right.$$

* mg / 100 c cm plasma

It is frequently found that brownish or purplish tints produced in the reaction make colorimetric comparison with the artificial standard difficult. These extraneous colours (probably due to traces of substances other than bilirubin which react with the diazo reagent) may be eliminated by the use of a coloured light filter (see section C).

The green filter (Ilford spectral green $\frac{1}{2}$ in diameter is an appropriate type) is placed over the eye piece of the colorimeter and the reading made against the artificial standard. The adjustment is then made in a green field whose two halves are of exactly the same quality of colour, and differ only in intensity. The reading is taken in the usual way.

SOLUTIONS

Stock standard methyl-red solution—0.29 g of pure methyl red is dissolved in glacial acetic acid and the volume made to 100 c cm.

§ There is no generally accepted range of normal values for blood bilirubin. Research in progress suggests that the normal values determined by this method fall within the range 0.1 to 1.3 mg per 100 c cm of plasma with the majority of the values within the limits 0.3 to 0.8 (Vaughan and Haslewood 1937). If the diazo reagent is carefully layered above the plasma and the tube allowed to stand for a few moments a positive direct reaction (if present) may be seen at the liquid junction.

Methyl red standard (20 mg per litre at pH 4.03)—1 c.c.m. of the above standard is placed in a litre flask together with 5 c.c.m. of glacial acetic acid. Water is added and 14.4 g. of crystallised sodium acetate are washed into the flask. When dissolution is complete the volume is made to 1 litre with water.

The diazo reagent—This is made by mixing two solutions A and B.

Solution A is made by dissolving 1 g. of sulphanilic acid in 250 c.c.m. of N hydrochloric acid and making the volume to 1 litre with water.

Solution B contains 0.5 g. of sodium nitrite in 100 c.c.m. of aqueous solution.

The diazo reagent mentioned above is made freshly before use by mixing 0.3 c.c.m. of solution B with 10 c.c.m. of solution A.

III—Plasma Phosphatase

PRINCIPLE

The estimation of phosphatase depends upon measuring the amount of hydrolysis which takes place when the enzyme is allowed to act on a suitable substrate—an ester of phosphoric acid (such as phenyl phosphate) under standard condition. The amount of phosphate or phenol so liberated may be taken as the measure of the amount of enzymic present. The phenol is more conveniently determined than the phosphate and three times as much phenol as phosphorus is set free. The hydrolysis is carried out at the optimum pH of 10 for 15 minutes. The results thus obtained agree very closely with those of the method of King and Armstrong (1934) of which this is a modification and with the method of Jenner and Kay (1932). The results are expressed in arbitrary units of phosphatase activity. By this method the blood of normal individuals contains 5–10 units per 100 c.c.m. of plasma. Great increases are found in cases of generalised bone disease and obstructive jaundice. Infective and toxic jaundices show smaller increases.

METHOD

Test—In a conical centrifuge tube are placed 4 c.c.m. of buffer substrate. The tube is allowed to remain in a water bath at 37°C for 5 minutes. Without removal of the tube from the bath exactly 0.2 c.c.m. of plasma (which must be cell free) is added and mixed. The stoppered tube is allowed to remain in the bath exactly 15 minutes. At the end of this time 1.8 c.c.m. of dilute phenol reagent are added and the mixture centrifuged or filtered.

Control—In another tube are placed 4 c.c.m. of buffer substrate, 0.2 c.c.m. of plasma and at once 1.8 c.c.m. of dilute phenol reagent are added and the mixture centrifuged or filtered.

4 c.c.m. of filtrate from the test and control solutions are pipetted into test tubes, 1 c.c.m. of 20 per cent. sodium carbonate is added and the tubes replaced in the water bath for 5 minutes to bring up the colour.

Comparison—The solutions are compared in the colorimeter with a standard made up at the same time by taking 4 c.c.m. of standard phenol-solution and reagent and 1 c.c.m. of 20 per cent. sodium carbonate. The tested solution is placed on the left hand side of the colorimeter and set at 30 mm. The standard is placed on the right hand side and the colours matched. The use of an orange or red filter will be found to increase the ease of colorimetric comparison particularly with weak solutions (see section C).

CALCULATION

The phosphatase activity of a plasma is expressed as units per 100 c.c.m. and is numerically equal to the mg. of phenol which would be set free from the phenyl

phosphate under the standard conditions by 100 c.c.m. of plasma. Thus:—

$$\frac{\text{mg phenol per 100 c.c.m. plasma in test}}{\text{mg phenol per 100 c.c.m. plasma in control}} = \frac{\text{Units of phosphatase per 100 c.c.m. plasma in test}}{\text{Units of phosphatase per 100 c.c.m. plasma in control}}$$

The number of mg phenol in 100 c.c.m. of plasma in the test and in the control is found by the equation:—

$$\frac{\text{Reading of standard} \times \text{strength of standard}}{\text{Reading of test}} = \frac{6 \times 100}{4 \times 100}$$

With the unknown solution set at 30 mm and the strength of standard = 0.04 mg thus equation can be written:—

$$\frac{\text{Reading of standard}}{30} \times 0.04 \times \frac{6 \times 100}{4 \times 100}$$

All figures in the above equation cancel out making it equal to Reading of Standard.

More simply then:—

$$\frac{\text{Units of phosphatase per 100 c.c.m. plasma in test}}{\text{Reading of standard against the test}} = \frac{\text{Reading of standard against the control}}{\text{Reading of standard against the control}}$$

SOLUTIONS

1 **Buffer substrate**—M/200 phenyl phosphate in M/20 sodium carbonate—M/20 bicarbonate buffer 1.09 g. di-sodium phenylphosphate 5.3 g. anhydrous sodium carbonate and 4.2 g. sodium bicarbonate are dissolved in water and made to 1 litre. The mixture is preserved in a well stoppered bottle with a few drops of chloroform and kept in the ice-chest when not in use.

2 **Phenol reagent of Folin and Ciocalteu**—As described in Peters and Van Slyke's "Quantitative Clinical Chemistry" vol. II p. 685 and Beaumont and Dodd's "Recent Advances in Medicine" 8th ed. p. 403. This reagent is diluted 1 in 3.

3 **20 per cent sodium carbonate (w/v)**—20 g. of anhydrous sodium carbonate are dissolved in warm water and made to 100 c.c.m. This solution is preserved in a warm place otherwise the sodium carbonate tends to crystallise out.

4 **Stock standard phenol** (100 mg per 100 c.c.m.)—1 g. pure crystalline phenol is dissolved in and made up to 1 litre with 0.1 N HCl.

5 **Diluted stock standard phenol** (10 mg per 100 c.c.m.)—Made by a suitable dilution of (4). (This keeps for at least three months in the ice box.)

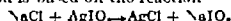
6 **Standard-phenol-solution and reagent** (1 mg phenol per 100 c.c.m.)—5 c.c.m. of diluted stock standard (10 mg per 100 c.c.m.) and 15 c.c.m. diluted phenol reagent are made up with water to 60 c.c.m. This solution should be made freshly for use, but will keep several days if preserved in the ice-chest.

IV—Plasma Chloride

The blood plasma of normal persons contains from 560–620 mg. of chlorides (per 100 c.c.m. expressed as NaCl). A decreased plasma chloride may occur in febrile conditions particularly pneumonia, Addison's disease and in cases of gastro intestinal disturbances associated with vomiting or with diarrhoea.

PRINCIPLE

The method is based on the reaction



Silver iodate in ammoniacal solution is added to the deproteinised filtrate of blood or plasma. The excess of silver iodate together with the silver chloride formed is precipitated by the addition of acid leaving in solution an amount of soluble iodate equivalent to the amount of chloride originally present. After the addition of potassium iodide the amount of iodine set free from this soluble iodate is determined by titration with thiosulphate.

METHOD

0.2 c.c.m. of plasma is added to 1 c.c.m. of water, 0.4 c.c.m. of zinc sulphate solution and 0.4 c.c.m. of 0.5 N sodium hydroxide are added and thoroughly mixed. The mixture is then centrifuged 1 c.c.m.

of the supernatant liquid ($\equiv 0.1$ c cm of plasma) is treated with silver iodate reagent (0.5 c cm) and after mixing, with 2 N sulphuric acid (0.5 c cm). The mixture is shaken and filtered through a small fine paper 1 c cm of filtrate ($\equiv 0.05$ c cm of plasma), with the addition of 1 c cm of 1 per cent potassium iodide, is titrated with 0.005 N sodium thiosulphate, with starch as indicator (Haslewood and King 1936).

CALCULATION

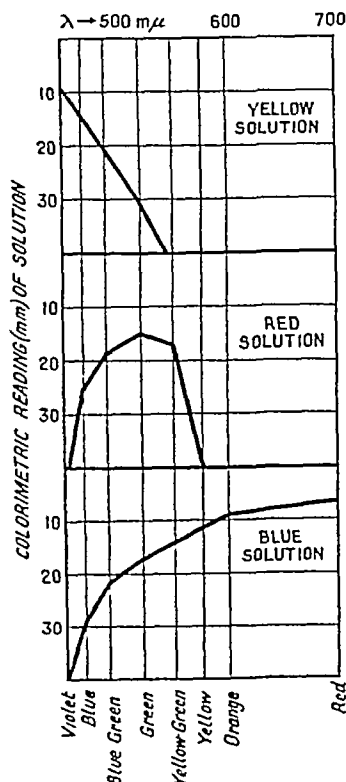
Chloride (as mg NaCl/100 c cm of blood) = $97.5 \times \text{titre}$

SOLUTIONS

Preparation of silver iodate reagent—Silver iodate is prepared by mixing equimolecular solutions of silver nitrate and potassium iodate. The precipitate is filtered, washed with distilled water, dried in vacuo, and preserved in the dark. 2 g of the dried solid are dissolved in 100 c cm N ammonia. Both silver iodate and its ammoniacal solution appear to decompose slightly when kept, with liberation of soluble iodate. Immediately before a series of determinations, therefore, 5 c cm of the stock (2 per cent) ammoniacal silver iodate are acidified with 2 N sulphuric acid (5 c cm) and centrifuged. The supernatant fluid is discarded and the iodate redissolved in 5 c cm of fresh N ammonia.

C—PHOTOMETRIC MEASUREMENT WITH THE ORDINARY COLORIMETER

Photometric measurement of the intensity of colour in a solution is preferable, for analytical



Absorption curves of standard solutions (neutral grey screens spectral filters). Yellow solution neutralised ammonium chloride solution (strong uric standard). Red solution density 0.75. Red solution bilirubin standard 0.1 mg in 25 c cm (Haslewood and King 1937). Neutral screen density 0.5. Blue solution uric acid standard neutral screen density 0.5.

purposes, to colorimetric comparison with standard solutions. More accurate measurement of the colour is possible, and interference by extraneous colours—a source of frequent trouble in colorimetry—can be avoided. Photo meters are, however, expensive, and most laboratories are already equipped with colorimeters of the Duboscq type. By the use of light filters and neutral grey screens it is possible to make photometric measurements with the ordinary Duboscq colorimeter. By placing the light filter on the top of the eyepiece, and using daylight or artificial illumination,

The spectral filters of Messrs Ilford Ltd are appropriate for the purpose. A set of 8 mounted glass (grade A) in 1 in. diameter is suitable and can be obtained covering the visible spectrum.

virtually monochromatic light is obtained. Neutral grey screens serve as standards of light absorption. The neutral screen is placed on the left hand rack of the colorimeter, and the rack screwed up till the screen is against the bottom of the plunger. The coloured solution is placed in the right hand cup and its depth is adjusted until the two fields appear equal. This depth gives the measure of the light absorbed by the solution, which is equal to that absorbed by the neutral grey screen. The absorption will vary for lights of different wave length as given by the different filters. With the filter showing maximum absorption the reading (millimeters of solution) will be minimum, and the depths of two different solutions of the same coloured substance should be in inverse ratio to the strengths of the solutions. Generally speaking absorption will be found to be maximum for red solutions in the green or blue green, and conversely, green solutions will show maximum absorption in the red. Blue and violet solutions are maximally absorbing in the yellow, orange, and red, and yellow and orange solutions in the blue and violet.

The grey screen of an appropriate density, together with the light filter showing maximum absorption may be used as a permanent standard for any colorimetric method. It should be calibrated against the coloured solution of known strength—the “standard”, and the general equation for calculating the result for an unknown solution—the “test”—then becomes—

$$\frac{\text{Read of std against grey screen}}{\text{Read of test against grey screen}} \times \text{Conc of std} = \text{Conc of test}$$

When comparison of an unknown solution with a known standard of the same substance is made, using the light filter showing maximum absorption, the accuracy of matching is increased, and interference by other contaminating colours is minimised because they are not maximally absorbing for light of the wave length being used.

REFERENCES

- Addis T (1928) *Proc Soc exp Biol Med* 25, 365
 Bolln O (1934) *J Biol Chem* 106, 311
 Harding V J and Downs C E (1933) *Ibid* 101, 487
 Nicholson T F, Grant G A, Horn G and Down C E (1932) *Trans R Soc Canada 3rd series* 26 (v) 33
 Haslewood G A D and King E J (1937) *Biochem J* 31, in press
 — (1930) *Ibid* 39, 902
 Jenner H D and Kay H D (1932) *Brit J exp Path* 13, 22
 King E J (1932) *Biochem J* 26, 292
 — and Armstrong A R (1934) *Canad med Ass J* 31, 316
 Sackett G E (1925) *J Biol Chem* 64, 203
 Somogyi V (1930) *Ibid* 87, 339
 Vaughan J and Haslewood G A D (1937) to be published

** For example Ilford neutral grey screens of 0.25, 0.5 and 0.75 densities. These should also be obtained mounted in glass (grade A) 1 in. is the most suitable diameter.

WEMBLEY HOSPITAL—The demands upon this institution are very heavy, and ever increasing, and an extension scheme has been prepared which will cost £28,000. A nurses' home and more accommodation for women and children will be provided.

WOMEN IN SOVIET RUSSIA—The central statistical department of the State Planning Commission of the U.S.S.R. announces that in 1936 the number of women employed at the factories in agriculture, transport, trade, public catering, health protection, education, &c. was 8,492,000 forming 34 per cent of the total number of employed workers. There were 15,338 women scientific workers and 42,333 women doctors—a little less than half the total doctors in the country. The number of welfare centres for mothers and infants grew from 247 in 1928 to 3945 in 1936, and during the same period the number of maternity beds increased from 32,773 to 48,250.

SPECIAL UNITS OF THE L.C.C. HOSPITAL SERVICE

A FEATURE of the hospital organisation of the London County Council is the segregation of certain types of cases requiring special treatment so as to allow of this treatment being under the control of teams of consultants skilled in the various specialities. The advantages are obvious: the comparison of results in a large number of cases is clearly of more value when these are under unit control, with accessory factors such as nursing personnel kept constant, multiplication of consultants and of equipment is avoided, and the reservation of a number of beds in one hospital for the same type of case enables the resident staff both medical and nursing to become specially skilful in its treatment.

Brief accounts of the work of these special units during the past year may be read in the Annual Report of the London County Council 1935 (Vol. IV Part III Public Health—Medical Supplement to the Report of the Hospital Services¹).

The *puerperal fever unit* at the North Western Hospital was in the charge of Dr A. Joe, with Dr Hilda Davis as assistant medical officer and Dr J. M. Wyatt as consultant obstetrician. 184 cases were treated during the year of which 166 were of uterine sepsis and associated complications with 11 deaths; the fatal cases are subjected to detailed analysis. Urinary infections complicated 42 out of the 166 cases of uterine sepsis. Towards the latter part of 1935 5 cases of *B. coli* infection were treated with mandelic acid when they had passed the acute febrile stage; in all the urine became sterile after a period of between 7 and 17 days.

A report on the *radium centre for carcinoma of the uterus* at the Lambeth Hospital supplies a very detailed table showing the cases of carcinoma of the cervix or corpus treated during each year from 1928 to 1934, divided into stages and differentiated between those confirmed histologically and those not confirmed. This table and the comments on propaganda on p. 92 merit serious attention. The gynaecological surgeon to this centre is Mr Arnold Walker, with Sir Comyns Berkeley as consulting gynaecological surgeon.

Mr George Stebbing, the surgeon specialist, Dr P. Berry, Dr T. M. Robb, and Mr L. H. Clark as physicist report on the radiotherapeutic clinic at the Lambeth Hospital. During the year under review 567 new patients were placed on the records of this clinic. A number of patients who had already had treatment by surgical operations or by radiotherapy elsewhere and had tumours at a very advanced stage were not included among these 567 cases as they were deemed unlikely to respond favourably though palliative treatment was expected to make them much more comfortable. The results obtained are set out in tables which show the crude survival rate up to five years for those treated in 1930 and since special attention is paid by the clerical staff and a lady almoner to following up patients it seems likely that these will yield very valuable statistical material in a few years. An account of the method of following up is instructive.

One of the most successful is the *plastic surgery unit* at St. James' Hospital under Sir Harold Gillies, Mr T. P. Kilner, and Mr A. H. McIndoe. During the year ended Dec. 31st 1935, 274 patients

were admitted, some of whom had come from as far as Scotland, Wales, and Devon. The classified list of cases treated shows a great number of operations for facial scars and nasal fractures. Cleft lips and palates also figure largely. Skin grafts of every description have been used by far the greater number being Thiersch grafts. Interest has been aroused by the promising results obtained in the surgical treatment of active lupus, and it is most encouraging to find that repair of cleft palate in infancy has resulted in such perfect results that the children seen years later are found to speak normally without speech training.

Sir Leonard Hill reports on the *arthritic unit* at St. Stephen's Hospital. A method of treatment is being tried in the rheumatoid type of arthritis which consists in lavage of the joint combined with synovectomy at an early stage of the disease. This gives an opportunity to Mr Timbrell Fisher and Dr G. H. Eagles to study early histological changes in the synovial membrane and in the joint fluid. Dr Claude Elman is investigating the results of gold therapy in the treatment of chronic infective arthritis.

Two *thoracic surgery units* have been established, one at St. Andrew's Hospital and one at St. James' Hospital. A great number of operations are being carried out on cases of chronic pulmonary tuberculosis. The operations done included thoracoplasty, phrenic evulsion, thoracoplasty and division of adhesions, and apicectomy. Dr J. W. Lunnell, working at St. Andrew's with the late Mr H. P. Nelson, also dealt with cases of intrathoracic new growth, lung abscess, and empyema. The only unsatisfactory results reported were in cases of tuberculous empyema and pyopneumothorax. Despite repeated irrigation and aspiration and intercostal drainage in secondarily infected cases, the efforts to prepare them for thoracoplasty have been disappointing. Of 5 cases of chronic non-tuberculous empyema on the other hand 3 were complete successes and of 8 cases of abscess of the lung, 6 recovered and this is as the authors say a highly satisfactory proportion in such a serious malady. The importance of good team work and in particular of highly skilled nursing is emphasised by the medical superintendent of St. Andrew's, Mr A. Tudor Edwards, working with Mr R. C. Brock and Mr L. O. Shaughnessy, reports on the second year's work at St. James' Hospital. Amongst 153 operations performed there were 27 thoracoplasties and 47 operations for acute empyema and 19 for chronic empyema.

A *goitre clinic* has been in existence at New Lnd Hospital since 1932. Cases are transferred to this clinic from the Council's hospitals and about a third come from outside the L.C.C. area. The patients are encouraged to attend the clinic at intervals after their operations and an effort is made to keep in touch with them by questionnaires. The majority of the 100 patients treated in 1935 were suffering either from primary Graves' disease (40 cases) or from thyrotoxic goitre (46 cases). 104 operations were performed, the majority under a combination of avertin, local infiltration and gas-and-oxygen and there were no deaths. The consulting staff are Sir Thomas Dunhill, Mr Coeffier Keenes, and Dr J. Ingham.

Dr A. F. R. Dewar gives an interesting account of the running of the *diabetic clinic* at St. George in the East Hospital and of the principles observed in the control of glycaemia in patients of different age groups. The avoidance of the danger of hypoglycaemia in the school child by the administration

daily of insulin in several small doses is considered. In the middle aged—i.e., those whose ages range from 45 to 60—the difficulty has not been so much in control of the main diabetic symptoms as in prevention of degenerative lesions, particularly of the nervous and cardiovascular types. Fibrositis is also an urgent problem. A high blood sugar is not regarded as the prime factor responsible for these degenerative changes. Dr B. A. Young, in reporting on the diabetic clinic at St Peter's Hospital, discusses the relative importance of urine analysis and of blood analysis in controlling the treatment. He says that at his clinic it is the practice to endeavour to keep the blood sugar within normal limits in younger patients. In the older patients urine analysis is often sufficient. In diagnosis, blood sugar estimations are, of course, necessary. Self administration of insulin is taught wherever possible. If the patient cannot be taught, a responsible relative is often available. St Peter's Hospital have been fortunate in having the co-operation of the East London Nursing Society who have administered insulin and helped in the education of the poorer diabetics. The higher carbohydrate diet combined with the low fat diet advised by Watson and Wharton has been successful in trials at St George in the East.

A congenital syphilis unit, with residential treatment for the children, at St John's Hospital is under the supervision of Dr David Nabarro. Twelve new cases have been admitted during the year, 9 boys and 3 girls, and there were 11 readmissions, all girls. Dr Nabarro reports that the progress made by the children is good and fully justifies the provision of residential accommodation. His only regret is that so few of the admissions are of infants under the age of 2-3 months, for it is when started at this early age that treatment is most likely to result in cure. Even better results are obtained by treatment of expectant mothers.

The urological unit at St Mary Abbots Hospital comprises two wards, male (28 beds) and female (25 beds). Under the auspices of the Medical Research Council the effect of Hombroek on prostatism is being studied. The number of cases has been small owing to the fact that before any research can be carried out the patients must be free from urinary infection. It is stated that the results as far as can be ascertained have not been satisfactory. A follow up department has been established for prostatectomies and stricture cases, patients from other hospitals may attend this clinic for dilatations. A total of 165 operations were performed during 1935, and the report of the medical superintendent, Mr James Carver, shows that a great variety of genito-urinary diseases are dealt with. Curiously enough, amongst 248 admissions there were only 2 cases of tuberculosis of the kidney and none of tuberculosis of the testis. Urinary infection accounts for 83 admissions, stricture of the urethra for 18, and enlargement of the prostate for 26. The other cases cover a wide field.

Mr D. A. Benthie reports on the fracture clinic at Fulham Hospital. He emphasises the importance of segregation of these cases on admission to hospital. The two wards available at Fulham are equipped with special power points for the use of portable X ray plant and with fracture beds of the Maurice Smoliar type, that can be tilted by means of pulleys fixed to the ceiling. By collecting the cases in one ward the training of the nursing staff is made much easier and more efficient. In treatment of out patients ambulatory plaster methods are employed,

and every fracture case that has been treated in hospital attends. The senior member of the massage department is always present to ensure the closest possible co-operation between the surgeons and the masseuses. The records are kept in a filing system that renders them easily accessible at any time. The patient's notes are filed with the X rays in one envelope inscribed with his name and number. A viewing box forms part of the equipment. The average number of patients attending the weekly sessions of the clinic vary between 38 and 45. In addition to fracture cases, all orthopaedic patients of the out patient type and any out patients referred for massage treatment are kept under observation at the clinic.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

THE American Foundation Studies in Government published on April 5th its report on medical care in the United States¹. This report is significant both as a contribution to the science of government and as a presentation of the serious thought of the profession most concerned upon the urgent social problem of providing "adequate" medical care to the people. The work of organisation, of review, and of compilation involved in this study must have been tremendous. Wealth alone could not have accomplished it. The Foundation has been well served by research workers with both imagination and ability.

The report is based on some 5000 letters from more than 2000 carefully selected physicians located in all parts of this country. It represents the views of individuals rather than of organisations. At the same time anonymity has been preserved in order that the facts and arguments presented may stand on their own authority. The reader is obliged to rely upon the Foundation for the verification of statements, but he will probably be willing to do so both on account of their general reputation and the evident competence displayed in the preparation of this report. English readers may find it difficult to appreciate how greatly American readers might be affected by the publication of names in this very controversial discussion.

This study does not "prove" anything. It was not intended to do so. What it must do is to promote thought, broaden understanding, and dissolve prejudice. Incidentally it will be a "source" book for sociologists and serious students of government in universities all over the world. For the problems with which it deals are by no means peculiar to the United States.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

DISCOVERER OF ETHER ANÆSTHESIA

A MEMORIAL to Crawford Williamson Long, American discoverer of ether anæsthesia, was unveiled in the library of the Royal College of Surgeons in Edinburgh, last week. The memorial is a plaque which has been presented by the Southern Society of Clinical Surgeons, U.S.A., in appreciation of their reception in Edinburgh during their visit in 1936. Dr Long (1815-78) made his discovery at Jefferson,

¹ American Medicine. Expert Testimony Out of Court. The American Foundation Studies in Government. 365 Fifth Avenue, New York City. 1937. Pp 1500 (2 vols.) £3 50 for both volumes.

Georgia on March 30th 1842 Mr L B Wevill F.R.C.S.E. who was introduced by the president of the College, pointed out that this remarkable discovery was made by an unknown young general practitioner working in a small country town. The effect of inhaling nitrous oxide or ether was at the time used by itinerant chemists to cause amusement. Long observed that during these frolics the subjects of the experiment did not complain of pain when they injured themselves. He therefore proposed to a certain Mr Venable one of his patients who required to have a wen removed that here might be a way to have the operation done painlessly. On March 30th 1842 this experiment was carried out with complete success.

POST GRADUATE TEACHING

The syllabus for post-graduate teaching in Edinburgh has just been published. Apart from the usual summer courses arrangements are being made for an intensive eight weeks medical course to be held next autumn. There will be four hours of coordinated teaching each day during the course and special facilities for the study of clinical methods and ward work.

IRELAND

(FROM OUR OWN CORRESPONDENT)

MEDICAL ATTENDANCE ON THE CIVIC GUARD

A few weeks ago Mr Rutledge Minister for Justice received a deputation from the Council of the Irish

Free State Medical Union to hear their views on the method ordinarily employed for the appointment and remuneration of medical attendants to the Garda Síochána in country districts. It was pointed out to the Minister that when a vacancy occurred in the position of medical attendant to the Garda it had become the custom for an officer of the Force to invite the medical practitioners in the neighbourhood to tender for the post, stating the fees they would be willing to accept for the several services rendered. The practitioner who was willing to accept the smallest fees was usually appointed. The Minister without admitting that the deciding point was the size of the fees demanded recognised that the present method was unsatisfactory and promised to endeavour to alter it. The matter was raised again in the Dáil last week in the debate on the estimates by Dr R. J. Rowlette who had called attention to it previously two years ago. He also commented on the fact that the State did not supply a full medical attendance to members of the Garda but only what might be called a general practitioner service. If a guard had to seek the advice of a specialist or to enter hospital he must do so at his own expense. He suggested that a guard should not be in a worse position than a soldier as regards the care of his health by the State. There should be an efficient medical service provided by the State for its servants. The Minister in reply stated that the question of remuneration was the subject of communication between his Department and the Department of Finance and he hoped for a satisfactory result.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdr R. L. G. Proctor to *President* for course
Surg Comdr J. S. Elliot and L. S. Goss, O.B.E. retire at own request with rank of Surg Capt
Surg Lt-Comdr T. W. Fleggatt to *St Angelo* for R.N. Hosp Malta. J. J. Keovil to *Leander* and lent to N.Z. Division for three years and E. J. Mookler to *Ganges*
Surg Lts W. W. Skimins to *Furious* and T. McCarty to *Drake* for R.N.B. and to *Centurion* (on coming)
Surg Lts for Short Service G. L. Hardman (St George's Hosp.) J. F. Moyneil and W. S. Parker (Mauclerk Univ.) and W. B. Teasey (Queen's Univ. Belfast)
Surg Lts (D) H. Bradley Watson to *Penbrooke* for R.N. Infirmary Deal and S. R. Wallis to *Royal Sovereign*
W. G. Smith and E. B. Mackenzie to be Surg Lts. (D)

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lts F. T. Land promoted to Surg Lt-Comdr and G. C. Martin transferred from List 1 of the Reserve Division to List 2 of the London Division
Prob Surg Lt J. K. Sargentson to *Ramillies*

ARMY MEDICAL SERVICES

The War Office announces that Col G. G. Tabuteau D.S.O. late R.A.M.C. has been promoted to the rank of Major General with effect from April 1st and will continue in his present appointment as Deputy Director of Medical Services Northern Command.

Major-General Tabuteau received his medical education at the Royal College of Physicians and Surgeons Dublin and entered the R.A.M.C. in 1905. He was promoted Lt-Col in 1920, Major-General in 1932 and Col in 1934. He served in France and Belgium during the Great War and in addition to receiving the D.S.O. was twice mentioned in dispatches. He also served in Waziristan (1912-21) and in Burma (1920-32) being mentioned in dispatches for the latter service and receiving the brevet rank of Col.

Maj Gen FitzG G FitzGerald C.B. D.S.O. K.H.S. late R.A.M.C. is placed on half pay under the provisions of Art. 500 Royal Warrant for 1st and Promotion 1931
Col A. Dawson O.B.L. late R.A.M.C. retires on first pay

Lt Col H. Gall from R.A.M.C. to be Col
Lt-Col A. N. McNeill D.S.O. from R.A.M.C. to be Col

ROYAL ARMY MEDICAL CORPS

Majs to be Lt Cols: R. H. Alexander M.C. R. W. Galloway D.S.O. W. Frier and F. G. Flood M.C.

REGULAR ARMY RESERVE OF OFFICERS

Maj G. M. Rigby having attained the age limit of liability to recall ceases to belong to the Res. of Off.

SUPPLEMENTARY RESERVE OF OFFICERS

Lt R. L. Walmsley to be Capt

ARMY DENTAL CORPS

Maj J. H. W. Fitzgerald having attained the age for retirement is placed on ret pay
Short Service Commissioners—Lts to be Cpts R. Walker D. V. Taylor and D. S. Wilson

ROYAL AIR FORCE

Wing Comdr B. F. Haslethorpe to R.A.F. Station Ceshot for duty as Medical Officer
Squadron Leader C. G. J. Nicolls to R.A.F. Station Gosport for duty as Medical Officer
Flight Lt O. S. M. Williams to Princess Mary's R.A.F. Hosp. Halton
Flying Offr R. F. Courtin to R.A.F. Depot Uxbridge

DEATHS IN THE SERVICES

The death occurred on March 14th at South of Lt Colonel ROBERT GALE D.S.O. R.A.M.C. retired. Born in August 1887 he was a son of the late Mr Laurell Gale and was educated at Glasgow University and graduated M.B. Ch.B. Glasg. in 1909. He entered the R.A.M.C. in the same year, became captain in 1913 and major in 1921. From 1911 to 1914 he was in civil employment in Egypt, and then served during the European war to 1918, being mentioned three in dispatches and created D.S.O. in 1915. In 1934 he was Deputy Assistant Director of Medical Services Northern Command at York. In 1916 he married Lora, daughter of the late Mr R. F. Alexander of Glasgow, and leaves a son and daughter.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month, his name can be seen later in the half-yearly index

FROM A TADDYGADDY

II

"Of his works there is no end" The man who wrote that was thinking of us as we were more than two thousand years ago the ordinary plodding day in day out G.P.'s of his time. We don't seem to have changed much. We still are slaves of the night bell and the inconsiderate friends of the patient who never think of sending till after hours. He was an observant chronicler. Did he not go on? "From him is peace over all the earth."

Our remote predecessors knew enough to carry with them always a few opium pills, or their equivalent, so that, once disturbed, they would not get a second message on the same night from the same restless patient. Yet was he thinking merely of the comfort, or discomfort, of the doctor? Assuredly not. That writer, Jeshua Ben Sira, thought many wise thoughts and, fortunately, wrote them down. When he wrote about us and peace he was thinking—can we doubt it?—of the part other wise men might take in ensuring it. Is it arrogant if we, the doctors of to-day, claim to be numbered with the wise? We may not have any very great store of book learning—in our student days we were compelled to the study of books that were hardly books at all in the proper sense, but if we are not wise it surely is our own fault. We are thrown, whether we like it or not, into the intimate company of men and women of all sorts. If we do not learn wisdom from them we shall learn it nowhere.

* * *

"From him is peace" Why not? The statesmen talk of war and preparations for war. That way come death and destruction. We are doctors. Our job is the prevention of death, when possible, the alleviation of suffering. Actually we are, or should be, at variance with the statesmen in so far as they consider war inevitable. But are we? And now, somebody will say, I am becoming political. Maybe. But I am content to walk with Ben Sira. He also was political, but he knew how to write. And he was always on the side of righteousness. Somehow I cannot help feeling that if we doctors would we could do a vast deal in the direction of fostering world peace. In our time we have seen so much of the personal effects of war. Potentates pay ceremonial visits to hospitals where they are shown the more presentable cases and say the appropriate things. We see the men who, owing to the activities of flying bits of jagged hot metal, or of noxious gases, are no longer capable of controlling their more unpleasant functions. We know, from personal observation, that war means something even more horrifying than a patch of country littered with corpses. It means here and there an assembly of men, still alive, but no longer men as men were meant to be. Do the statesmen—it matters little whether they are, or are not, dictators—ever think of those half men?

* * *

What about that old time sentence, "From him is peace over all the earth?" Has it any meaning for us? We do not let us forget this, our members

of a corporation that is international as no other corporation except the Catholic church is international. To a doctor any other doctor is as he is—just a doctor. We have no secrets we will not share. If you or I, English doctors, happen to stumble on something that will help matters in the struggle with—shall we say, the common domestic cold in the head?—we pass it along as quickly as the postal authorities will permit to the uttermost parts of the earth. We are no more respecters of narrow nationalism than were the wandering scholars of the days of faith. They tramped from university to university, from monastery to monastery, from bishop's palace to bishop's palace, swapping manuscripts, gossip, and ideas. So is it with us, with this exception—we do not have to tramp. And yet, in spite of all our heaven given opportunities, we are content to let our power run to waste.

* * *

It was another Hebrew who wrote "Wisdom went forth to make her dwelling place among the children of men, and found no dwelling place. Wisdom returned to her place, and took her seat among the angels." It is not surprising that he wrote thus. Between his time and the time of Ben Sira his country had been a battlefield for a couple of hundred years. Ben Sira had looked forward. That later writer looked back. And we—in what direction do we look—we, the doctors of this much later age?

* * *

My working life has been spent in and about back streets, and long before it began I wandered in and out of the homes of the poor with my father, who was essentially a poor man's parson. As a child I numbered many old women among my friends. There was one who lived in a single room with a parrot and, during the proper season, a great cardboard box in which silkworms grew fat on a diet of lettuce leaves until they shut themselves up in cunningly spun prisons of gleaming silk. She and I shared a secret hope—that some day we should gather a pound of yellow silk thread, for then we should be paid a whole sovereign. We never did. Once I found that old woman in a state of dire distress. She had upset her cardboard box, and the silkworms were loose in her bed. However, I collected them for her and all was well. There was another old woman who had as sole companion a bantam hen. She used to give me bantam's eggs which were served up for my breakfast in a wooden egg cup decorated with a picture of the Crystal Palace given me by another old woman. And this very evening an old woman, very poor, she lives in a single room in an alms house—has come to see me because she has a sore throat. That is unusual. As a rule when she comes it is to press upon me a bottle of home made wine of her own brewing. And the point of all that personal chronicle is just this, that all these old women were friendly. They asked no more than that they might be at peace with everybody else. And is it not so generally? In back streets people quarrel one with another. There are family feuds. But let trouble happen along—the feuds are forgotten, are put on one side. Mrs. Jones will sit up all night with her enemy Mrs. Smith, and

then go off to her work next morning without turning a hair. Forty years in and about back streets have shown me something of the inherent friendliness of people.

* * *

Is it surprising that I an ordinary average G.P. a Taddygaddy fall entirely to understand why it is the statesmen seem to think war inevitable? I have gone about my business for many years in quarters that were terribly overcrowded but very seldom have I heard any suggestion from the people living there that they shall go and seize by force more roomy quarters. The governing people of Europe would be horrified if the common people did that. Yet they have no hesitation in doing it themselves. They call it expansion. In furtherance of their policy they employ any sort of devilish device that comes to hand. They burn and blister and blow up any who have the temerity to get in their way and leave us to do what we can in the way of repair. We can do something for the burned and the blistered but those effectively blown up are beyond our power to help.

* * *

World politics to every experienced Taddygaddy must seem entirely mad. The one remedy that may even yet, be effectual is ridicule. The statesmen of Europe seem to have forgotten how to laugh. But

we have not forgotten. A Taddygaddy an ordinary G.P. who has forgotten how to laugh is no longer a Taddygaddy. He has become no more than a medical man—a tradesman hawking his wares in hope of profit just that, and no more than that. We have not arrived there yet. We still are a profession that takes no heed of national boundaries. To us it matters not at all whether another doctor be French or German or Jap or English. We do not ask a sick man to produce his passport before we offer our services. All we ask of the foreign doctor is that he shall help: of the foreign patient that he shall accept.

* * *

We have our ideals. They are very largely the ideals of the mediæval church which took small stock of narrow nationalism preaching—even when it did not practise—international brotherhood. The church had this at least, a common language. The clerk, wherever he went could talk to fellow clerk. That made for international unity so far as the clerks were concerned. We the doctors of the world may go further if we will. We have no common language unfortunately. We no longer express ourselves in Latin as did that great pathologist Shattock not so long ago. But we have this in common with all doctors—sympathy of aim. Cannot we urge that upon the politicians? They might they might see what it is we are getting at.

PANEL AND CONTRACT PRACTICE

Black coated Workers

THE text of the Widows Orphans and Old Age Contributory Pensions (Voluntary Contributors) Bill, 1937 was issued on March 23rd. Health and pensions insurance have been so interlocked hitherto that it is not surprising that some practitioners have wondered whether the Bill may bring into medical benefit persons who have previously been excluded. This is not so. The purpose of the Bill is simply to extend the benefits of voluntary insurance for widows orphans and old age pensions to persons with small incomes whether working on their own account or not who have not the qualification of insurable employment required under the present scheme. The persons now rendered eligible for pensions will include ministers of religion shop keepers farmers dressmakers and music teachers. Its provisions will give them no claim for medical sickness, or disablement benefit. The scheme not being compulsory the full pension will be dependent upon the payment of a certain number of contributions. If the average falls below that number the rates of pension (normally those provided under the Contributory Pensions Act of 1936) will be reduced. Applicants for admission to insurance must have been resident in Great Britain for at least ten years, their income at the time of application must not exceed £400 a year for men £250 for women and in either case up to half may be unearned. For the first year applicants not exceeding 55 years of age at the commencement of the scheme will be admitted at 1s 3d per week if insured for all benefits or 10d a week for widows and orphans pensions only. Women initial entrants will be insured for old age and orphans pensions for 6d. a week. After the first year applicants must not be more than 40 years of age at the date of application and their contributions will vary in accordance with their age at entry. The main qualifying conditions for a pension are as follows:

For a widows or orphans pension.—104 weeks of insurance and payment of 104 contributions since the date of entry into insurance.

For an old age pension.—Continuous insurance for at least ten years immediately prior to attainment of the age of 65 and payment of 260 weekly contributions.

Full pensions will be paid only if there is an average of at least 50 weekly contributions per annum throughout insurance.

Mixed Partnerships

Dr A resigned from an insurance committee's list in the hope of securing an appointment as head of a department for psychological treatment to which his having an insurance practice would have been a bar. He transferred his insured patients to another member of his firm two of whom were under agreement with the committee. Dr A wished to attend insured persons on behalf of his partners but the committee were of opinion that it is undesirable for the partner of an insurance practitioner not to be under contract to treat insured persons, inasmuch as misunderstandings and abuses might arise from the treatment of insured persons by a non insurance practitioner. The committee made a further point his partners might call Dr A in as consultant when he was not the best specialist for the purpose because his fees would form part of the firm's income. The matter was referred to the Ministry of Health which replied thus:

The Minister of Health is advised that there is no legal objection to the partner of an insurance practitioner not being under contract with the insurance committee, and the Minister has no information which would lead to the conclusion that such a partnership is an undesirable one tending to lead to misunderstanding and abuse. The Minister sees no ground on which exception could be taken to the giving of treatment outside scope by the non insurance partner. If an insurance practitioner refers one of his patients to his non insurance partner for treatment outside the scope of an insurance practitioner's obligations no case could lie against

him unless it were shown that he had not faithfully discharged his duties if the non insurance partner had the necessary qualifications for undertaking the treatment, the fact that some other practitioner might be better qualified would not necessarily indicate non compliance with the requirements of Clause 9 (1) "

The Insurance Acts Committee has recently had under consideration a communication from a provincial panel committee raising the question of partnership between a practitioner who is doing insurance work and one who is not. The question had arisen because of a suggestion from the insurance committee concerned that the partner with the private practice only should agree not to charge

fees to his partner's insured patients. In 1934 the annual panel conference referred to the I A C a motion by Lancashire in the following terms

"That in the opinion of this conference an arrangement whereby an insurance practitioner has any partnership with a doctor who is not on the medical list is prejudicial to the observance of the regulations governing insurance practice and must of necessity conduce to abuses in the matter of receipt of fees by insurance practitioners from patients on their lists "

The I A C's view was that any abuses which could be attributed to such a partnership occurred so seldom as not to demand a special regulation, and the 1935 conference concurred in this view

PUBLIC HEALTH

1936 in Scotland

DETERIORATION rather than improvement in the health of Scotland during 1936 is shown by the report of the Department of Health just issued. The infantile mortality rate rose from 77 in 1935 to 82, which compares very unfavourably with England's rates (57 and 59 respectively). Maternal mortality fell from 63 to 56 per 1000 live births, but even the latter rate is higher than it ought to be. The slight rise in the general death rate, from 13.2 to 13.4, and the slighter increase in tuberculosis mortality can be put down to epidemic prevalence of influenza. The history of infectious disease in Scotland in 1936 was not sensational, though the biennial epidemic of measles was sharper than usual, there was an unusual amount of poliomyelitis in autumn in south east Scotland, and several small outbreaks of paratyphoid occurred, especially in the west. As in the rest of Britain and most parts of Europe, diarrhoeal diseases (including the typhoid and dysentery groups) were more prevalent in 1936 than for many years.

The Scottish Office provides an annual report on the health of insured persons, which is the most reliable of the meagre reports on morbidity available. We read that it is "disappointing that the completion of a quarter of a century of National Health Insurance leaves the incidence of incapacitating sickness so high—at eleven days per insured person per annum and the figure is not declining." But in two places attention is called to the higher standard of health demanded which causes employees to go off work earlier and more frequently and to return to work later than they did in the past. To what extent this leads to better health is one of the chief medico-social problems before us at present. Attention is called to the increase in chronic incapacity not attributable to the increased age of the population and an alleged increase in deaths from rheumatic heart disease amongst the young. "Year after year at least 1000 lives are lost from this type of heart mischief in Scotland." Housing in Scotland is notoriously bad, but it is astonishing to read that overcrowding is six times as common as it is in England. The paragraph on housing gives the impression that the Department attributes much of the avoidable ill health of Scotland to bad housing.

A chapter on food supply opens by describing a milk feeding experiment on school children in England and Scotland. A third of the children were given daily a third of a pint of pasteurised milk, another third were given two thirds of a pint of pasteurised milk and the remaining third were given two thirds of a pint of raw milk. No difference was detected between the pasteurised and raw milk groups, but

the two thirds pint children did better than the one third pint. The milk in schools scheme, similar in Scotland to what it is in England, is having the same history. After the first spurt there was a big reduction in the numbers of school children paying for the milk, though recently the tide has turned and there is a slight increase. The reasons assigned for what must be considered a partial failure of the scheme can be divided into excuses that should be ignored and grievances that should be remedied. The latter are three in number: novelty worn off, mid morning milk spoils the appetite for dinner, parents resent paying for what some can obtain free. The first is the most important. The milk in schools scheme was introduced to foster the habit of milk drinking, but so far its success in that direction has been poor, for the habits of the people are not to be changed in a few months. It is necessary to make the milk in school a more intimate part of education if it is to engender a permanent habit of milk drinking. If eleven o'clock milk were called an aperitif instead of a milk ration it might increase and not diminish appetite for the midday meal! In any case the drink can be retimed. From Dundee comes the admirable suggestion to give the ration between 9 and 10 o'clock because "it would be of benefit to such children as had had only a scanty breakfast." There is general agreement that a third of a pint of milk is insufficient, and a growing tendency to give more of it free.

An Epidemic and the Public

In the late summer of last year there was an outbreak of typhoid fever in the Bournemouth district in the course of which 523 cases were notified to the sanitary authorities of Bournemouth, Poole and Christchurch, and 41 deaths occurred. Complaint was made in the local press against the local authorities that they had not taken the public into their confidence at a sufficiently early stage. There was in fact a suggestion that an endeavour had been made to conceal from the public the true facts about the outbreak. At the request of all the parties concerned, Judge Cotes Preedy held a private inquiry, the report of which was issued on Tuesday. In his view, once the situation was established, there was no endeavour on the part of the authorities to conceal the true facts about it, he thought the official would have acted unwisely if they had sponsored the announcement in the press of an existing epidemic directly suspected cases had appeared. It was common knowledge, he remarks, that sporadic cases of typhoid frequently occur and the difficulty of diagnosis called for caution, if only for the reason that a hasty announcement might determine the flight of people carrying the disease to all parts of the country.

CORRESPONDENCE

OVER TREATMENT OF GONORRHOEA

To the Editor of THE LANCET

SIR,—I beg to endorse the views given by Mr Nicholls in your issue of March 20th writing as one who has lived in that dark and uncritical world to which he refers having held posts in venereal disease clinics for over twenty years.

I gave evidence before a subcommittee of a V D hospital more than two years ago and directed attention to some of the points raised by him but do not know with what result. If the total number of attendances rather than the total number of patients is to be regarded as a criterion of good work and monetary grants are apportioned accordingly this system appears to call for the most searching investigation.

Among various types of cases which occur to my mind are those that are treated regularly over long periods by prostatic massage and posterior irrigations usually carried out by orderlies. In a large proportion of these cases the patient complains only of a slight morning urethral moisture and notices threads in the urine. Cultures and films continually taken show only diphtheroid bacilli and staphylococci the prostate exhibits no gross abnormality and the urethra appears normal on urethroscopy. Why are these cases condemned to protracted treatment with the risk of disastrous psychological reactions? Again irritation of the prostate by posterior irrigations and massage during the early weeks of gonorrhoea is in my opinion mainly responsible for the cases of acute prostatitis and epididymitis that are so frequently recorded. A prostate treated with respect and consideration will as a rule, give no serious trouble in the course of the disease. All experience goes to show that the efficiency of any V D clinic depends in great measure upon systematic liaison with various departments of a hospital of which the genito-urinary one is manifestly interdependent.

As Mr Nicholls points out, it is difficult to understand why gonorrhoea should be wedded to syphilis and why an expert knowledge of either disease provides any guarantee whatever of a like standard of efficiency in dealing with the other. It seems obvious that the syphilis department of a V D clinic should be divorced from the gonorrhoeal one; the director of the former having special experience in dermatology, cardiology and neurology and that of the latter in genito-urinary surgery and gynaecology.

Procedure in regard to the segregation of V D cases from others is another matter which demands urgent attention. For example the psychological effects on a man suffering from a non-gonococcal urethritis and prostatitis (now recognised as a common condition) when condemned to make use of the same cubicle and apparatus as a V D patient can be left to the imagination. The female V D department is in my opinion in still greater need of reorganisation. My experience has convinced me that this part of the clinic tends to become a sitting department for a variety of conditions—such as laceration of the cervix following childbirth, prolapse and mycotic diseases of the vulva and vagina—owing to the fact that under the present system a patient complaining either of vaginal discharge and irritation or of painful and frequent micturition is customarily referred to a V D department. This procedure

I submit not only involves a total disregard of the patients' feelings but also makes them reluctant to seek advice.

Some twenty years have elapsed since an inquiry relating to venereal disease was last held in this country. In view of the fact that the London County Council are to expend no less than £55,000 on V D clinics in London during the coming year it seems reasonable to suggest that the time has now arrived for the holding of another inquiry for the purpose of assuring the public that the organisation of these clinics is such that the money provided is being expended in the best interests of public health.

I am Sir yours faithfully

A MALCOLM SIMPSON

Wimpole-street W April 8th

WHO INVENTED THE IDEA OF TARRING ROADS?

To the Editor of THE LANCET

SIR,—In reply to the query raised by A Rusticating Pathologist in Grains and Scruples of March 20th the tarring of roads would seem to have been invented by Sin and Death when they thus treated their causeway across Chaos from Hell to the newly created World (Paradise Lost Bk. 2). The work of consolidating the materials with asphaltic slime appears mainly to have been done by Death, which suggests that the alleged increase of cancer of the lungs in recent times may perhaps be due not to the dusty roads of thirty years ago but to the widespread use since then of so notorious a carcinogenic substance as tar.

I am Sir yours faithfully

New College Oxford, April 2nd

R S CREED

To the Editor of THE LANCET

SIR,—In your issue of March 20th A Rusticating Pathologist begins his article with the statement: No one that I have asked has been able to tell me who invented the idea of tarring roads. It was a great discovery worth a peerage and a fortune as well as the preservation of a name. It may interest you to learn that it was Dr Guglielminetti, a Swiss by origin born in Monthey (Valais) who in 1900 in Montecarlo made the first experiments with tarring roads. As a doctor he was greatly impressed by the dust nuisance and this led him to his discovery. In the French automobile press Dr Guglielminetti has been appraised as le père goudron.

I am Sir yours faithfully

A L VISCHER.

Basel, March 21st

ATHLETICS FOR WOMEN

To the Editor of THE LANCET

SIR,—Your reviewer (March 27th p. 760) of the British Encyclopædia of Medical Practice dislikes my (apparently) old fashioned prejudices against violent exercise for women. Any such objections proceed from a variety of reasons, some perhaps merely a matter of taste, some affording legitimate scope for difference of opinion. It may be true as your reviewer submits that a large number of women condemned to childlessness seek an outlet for their energies in athletics although one may speculate whether some preferable form of sublimation might not be selected. But when he adds that my (presumed) contention that the habit of taking strenuous exercise makes for difficult labour is quite unsupported by evidence he implies that he has

the unanimous support of obstetricians and gynaecologists. A considerable number of eminent obstetricians have assured me that they are fully convinced of the disadvantageous influence of violent and strenuous exercise from their point of view. From my point of view there are other direct and indirect consequences of the strain of intense competition against which I particularly inveigh.

I am, Sir, yours faithfully,

Brook street, W, March 30th ADOLPHE ABRAHAMS

COLOUR PERCEPTION TESTS

To the Editor of THE LANCET

SIR,—In a moderately illuminated spectrum the number of colours seen by different people varies from six to two. The brightest portion of the spectrum is between wave lengths 57 and 61A, and from there the brightness appears to shade into the dark red and violet constituting as it were two areas of brightness, a central very bright area within a larger bright area. The colours in the former are pale greenish yellow, yellow and orange red, whereas the green and red in the larger area are saturated and distinct.

Trichromics and dichromics confuse red, green, yellow, and white signal lights. The only property common to these colours is brightness and the difference in brightness apparently enables colour blind persons to differentiate colours from each other. If this is correct, then mistakes should start in the brightest portion of the spectrum in the earlier varieties of colour blindness and be more and more pronounced till total colour blindness is reached—and this is exactly what occurs. The trichromic, the first stage of dangerous colour blindness, when asked to map out the fullest extent of red will stop short of orange and declare he can see yellow (or white), and when asked to do likewise with this colour will map out an area extending from orange red into a yellow green and declare it to be monochromatic yellow or white, whereas it contains pale red, orange, yellow, and pale green colours. This area corresponds to the brightest portion of the spectrum. He does, however, recognise the more pronounced red and green colours of the spectrum on either side of his monochromatic area. With a lantern examination the same person, if shown similar pale red, green, and yellow colours, will be unable to distinguish them because colours of this saturation and brightness come within his confusion area, but he will not confuse saturated reds and greens which are outside it. This confusion of colour corresponds to the extent of altered colour perception, increasing to a point where it reaches the stage of dichromatism.

Dichromics, when asked to map out the fullest extent of red, will map out an area extending right into blue and consider it red or yellow, and this area will be found to correspond to the larger area of brightness. As this area contains definite red and green colours with a lantern examination, they will mix up saturated red, green, and yellow colours. To the dichromic there is no difference between red and yellow, he is apt to call a yellow green red. The totally colour blind see only a bright area of varying shades of intensity. Looking at the full spectrum, dichromics see a white space of varying size between the red and violet.

There is apparently a definite balance between saturation and brightness on which the recognition of colour depends, and if this balance is upset then brightness gets the upper hand, bright red appears as yellow and violet as blue, giving rise to the

so called 'yellow and blue sensation'. There is not really an increased sense towards yellow and blue, these colours merely appear brighter. In all colour perception tests these facts should be borne in mind. When carrying out book tests care must be taken to make the examination in a bright light to bring out the confusion effect, otherwise varying results will be obtained with the same person by different examiners.

I am, Sir, yours faithfully,

C E R NORMAN,
Chief Medical Officer South
Indian Railway

Trichinopoly March 13th

THE ÆTIOLOGY OF PELLAGRA

To the Editor of THE LANCET

SIR,—May I call your attention to an error and a misconception in the report in your issue of April 3rd (p. 811) of my contribution to the discussion on nutrition and its effect on infectious diseases which took place on March 24th at the Royal Society of Medicine. The experiments with pigs referred to were carried out in collaboration with Dr T A Birch, not Bird, and Sir Charles Martin in the department of animal pathology at Cambridge. They were devised to study the nutritive defects of maize in the hope of throwing light on the ætiology of pellagra. On a diet of maize supplemented with pure casein the pigs soon ceased to grow and suffered from diarrhoea. This was apparently due to the combined effect of an intestinal infection and the defective diet, but it was not my intention to convey that the "intestinal condition" resembled that found in human pellagra.

I am, Sir, yours faithfully,

HARRIETTE CHICK.

Lister Institute, London S W April 5th

IMMUNISATION OF MEN—AND ANIMALS

To the Editor of THE LANCET

SIR,—I read with considerable interest your annotation in last week's number on vaccination against African horse sickness, and as a Houyhnhnm I was touched by the solicitude shown by your race for the less fortunate members of mine. This concern for the welfare of beings other than themselves has always seemed to me to be one of the traits which argues that the human race will some day emerge from its present state to something like what we Houyhnhnms would call civilisation. My brother, who has always taken a more cynical view than I of human endeavour, made the remark that had the horses been black instead of being of good British blood, African sickness could have done its worst without attracting much attention. But I pointed out to him that at any rate in large scale commercial undertakings painstaking and praiseworthy efforts are made by the management to prevent tuberculosis and pneumonia from incapacitating or exterminating the native labour force. I had, indeed, been reading your annotator's comments with unqualified gratification until I came to the final paragraphs where after detailing the various dangers and mishaps to horses, which might attend vaccination with neurotropic vaccine, he casually remarked that "these considerations are of minor importance."

So much depends upon the point of view! I confess that both my mane and my tail bristled at your annotator's remark. I could have to some extent understood it had he been referring to the immunisation of human children. I find modern human literature too depressing to read extensively, but from what

little I read and from what I hear from correspondents of my own people in different parts of the world I gather that humankind has definitely made up its mind that it is the State not the individual that matters. Of this I have nothing to say. I am liberal enough to believe that the human species and even such backward members of it as Russians, Germans and Italians know their own business best. But I should like to make it clear that the principle has never been admitted in Houghlinham philosophy and to this we are inclined to ascribe the culture peace and happiness of our society. So far as horses are concerned it must be allowed that their very origin was in the freedom of the unlimited steppes where the family rather than any larger social canvas was the fundamental unit. To an equine it would never appear a sufficient justification of mass immunisation that some other equine's offspring was saved if it were at the expense of unfortunate results of immunisation affecting his own offspring.

It may not be known to your readers that although immunisation methods have been introduced to a limited extent among the Houghlinhams they are only adopted after certain formal preliminaries. If a case has been made out in the laboratory for the procedure, our doctors are permitted to make trial upon themselves. If this is satisfactory (and there are any doctors left) volunteers who are told exactly how things stand are asked for and inoculated. The results on these are handed over to one of the most responsible officers of our State—the Lord Chief Statistician. With us this dignitary's opinions are as valued, his judgments are as binding and his jokes as highly appreciated as with your own Lord

Chief Justice. If his opinion is unfavourable the perpetrators of the false immunisation are severely punished and this perhaps explains why immunisation has never been so popular with us as with you. If on the other hand his opinion is favourable he affixes his seal and the countersign *fiat* (an abbreviation for *fiat experimentum* not for *fiat lex* as might be expected from human precedent). The *fiat* with the relevant data but without further remarks is then promulgated throughout our Commonwealth and any parents who choose may bring their foals to be injected. There is of course no compulsion and that essentially human activity—propaganda—is entirely unknown among us. It is one of the advantages of being a Houghlinham that the steppes are wide and grass is cheap and if we don't like society or its ways we can always lump it.

Mark you I am not denying the general principles expressed in your annotation. I wish merely to point out that though they may be applicable to many species of beings including yourselves they are repugnant to what I would with due modesty call horse sense. The classical human historian of my people (may his great soul rest in peace!) wrote also you will remember a constructive little pamphlet called *A Modest Proposal* for eating Irish children which it has always seemed to me deals admirably with the human aspect of the case. But you will say that Ireland isn't England and never was and although I find myself unable to subscribe to many human opinions I have in this instance to admit that you are probably right.

I am Sir yours faithfully

April 10th

A HOUGHLINHAM

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

THE House of Commons reassembled on Tuesday April 6th after the Easter recess.

The Special Areas (Amendment) Bill was read a second time.

QUESTION TIME

TUESDAY, APRIL 6TH

The Duties of Coroners

Mr EDWARDS asked the Home Secretary whether in view of statements recently made by coroners which seemed to be outside the function of a coroner he would now consider expediting action on the report of the departmental committee which deplored the tendency of coroners to make animadversions on the character and conduct of individuals.—Sir JOHN SIMON replied: I am not sure what particular statements the hon. Member has in mind but I fear there is no prospect of an opportunity being found during the present session for any legislation on the subject of coroners. I do not think there is any action which can conveniently be taken meanwhile to deal with particular recommendations included in the committee's report; but I have no doubt coroners have noted the recommendation in the report on the point to which the hon. Member refers.

VISCOUNTS AUSTON: Can the right hon. gentleman assure us that some action will soon be taken? Will he bear in mind that it was because of the action of coroners that the committee was set up and that a good many people are beginning to think that the committee was just so much eye wash?

Sir JOHN SIMON: I do not think that the hon. Member can take that view. The committee reported earlier in the year. It is not always possible to legislate immediately when a committee reports. But I would certainly agree with the committee in deprecating animadversions unnecessarily made in the course of an inquest which

reflect on persons who are not in the court and who have no means of reply.

Recruits Below Standard

Miss WARD asked the Minister of Labour whether he had examined the Aldershot experiment in connexion with recruits below the required standard for acceptance in the Army and whether he could make use of the satisfactory results in the sphere of unemployed men who were in need of health services.—Mr. ERNEST BROWN replied: The results of the experiment are now being examined by my department with a view to seeing whether they point to the need for any modifications in the treatment of unemployed men applying for a course of training.

Medicine Stamp Duties

Sir ROBERT BIRD asked the Chancellor of the Exchequer (1) whether he was aware of the great anxiety felt by those members of the Pharmaceutical Society engaged in trade over the recommendations in the report of the Select Committee on Medicine Stamp Duties; and whether it was his intention to introduce legislation implementing the recommendations wholly or in part; and (2) what steps he intended to take for terminating the loss to the revenue consequent upon the avoidance of the payment of medicine stamp duties disclosed in the report of the Select Committee on Medicine Stamp Duties.—Mr. CHAMBERLAIN, Chancellor of the Exchequer, replied: I can assure my hon. friend that due weight will be given to all relevant considerations in connexion with the committee's report but I regret I am unable at present to make any further statement on the matter.

CLATFEBRIDGE ISOLATION HOSPITAL.—A new nurses' home and a cubicle block were opened on March 22nd at this hospital by Major Green, chairman of the Wirral Joint Hospital Board. The scheme cost over £14,000 and the nurses' home has accommodation for 20

OBITUARY

CHARLES COLEY CHOYCE, C M G , C B E ,
F R C S

Prof Choyce, formerly surgeon to University College Hospital and director of the surgical unit there, died in the hospital on Friday last. He had been ill for a considerable time and had retired from all his professional positions.

Charles Coley Choyce was born in Auckland, New Zealand, and educated at the University of New Zealand, where he graduated as B Sc in 1896. He proceeded to Edinburgh for his professional training and graduated in medicine in 1901, proceeding later to the M.D. degree, while in 1905 he obtained the diploma of F R C S Eng. He held resident appointments at the Leicester Infirmary and the Dreadnought Seamen's Hospital, of which institution he was medical superintendent for three years, later he was surgeon to inpatients at the Albert Dock Hospital and assistant surgeon to the Dreadnought, while he also acted as outpatients' surgeon at the Royal Northern Hospital. At the outbreak of war he was appointed consulting surgeon to the Egyptian Expeditionary Force, with the temporary rank of colonel, A M S , he took charge of a large convalescent hospital for officers, and his services were recognised at the close of the war, when he was made C B E and C M G . Shortly afterwards he was appointed professor of surgery in the University of London with the chair at University College, while he became director of the surgical unit at University College Hospital.

We owe to Mr A J Gardham the following appreciation of Prof. Choyce's work and influence. "Prof. Choyce came to University College Hospital in January, 1920, as first director of the surgical unit, a post which he held until his retirement in October, 1935. The post which he was asked to fill was not an easy one—it called for new ideas, for persistence, and for an ability to handle men and things with firmness and tact. All these Choyce had, and by the ungrudging use of them he built up the surgical unit, carried it through its early troubles, and was able, when the time came, to hand it over to his successor as an established institution. It is probably true to say that by the time he came to University College Hospital he felt that his primary interest was in medical education. This interest he followed actively after failing health had curtailed his clinical activities, and it will be as a great teacher and as a charming and courteous personality that Choyce will live in the minds of those who passed through his hands in these years. It was never Choyce's aim to be a figurehead. His contacts with his colleagues and his juniors were essentially personal, and he was perfectly equipped to hold a post which by its very difference from that held by other members of the honorary staff enabled him to act as a connecting link between them. He was never happier than when some surgical or administrative problem led to a friendly meeting of his colleagues in his office. For students he had an almost royal memory, both for faces and character, and it was not for nothing that he was often referred to among them as 'Papa' Choyce. His gentleness however was never sufficiently indiscriminate to include the lazy or the inefficient, and his judgment of men was much more penetrating and critical than he allowed it to appear. The student who worked well in the surgical unit wards however unobtrusively, secured thereby a

wise and helpful friend for as long as he had need of him. The shirker, and most particularly the shirker who laid himself out as he thought to attract the favourable attention of the professor, found a stern critic beneath the genial exterior.

"There can be no one who has acted as Choyce's assistant in any capacity who does not wish to praise him as a master. Once an assistant had gained the confidence of the professor he was left to work out his own lines of thought and action, secure in



C C CHOYCE

the knowledge that his judgment would be backed by his chief in public, even if it were wisely and gently criticised in private. He believed that his function was to train men who would be capable of thinking and acting for themselves when the time came, and consequently his advice was seldom given unless sought. Choyce was sometimes criticised for his apparent inaction in relation to his assistants, and although it is perhaps still too early to judge completely how wise it was, many of those who learned to seek his advice and profit by it are now independent surgeons and teachers who remember their early training with gratitude.

"Choyce's literary activities are well known wherever surgery is practised and the English language understood. Only one who has shared them to some extent can understand the labour which went into the production and re-editing of 'The System'. Nothing but the best was good enough for this book. Choyce rightly felt it to be the standard by which English surgery is judged in many places where it is read of rather than seen, and he was proud of the responsibility which this threw on his shoulders. Personal surgical experience and knowledge which he had in abundance were useful, but not enough. In addition, he had the faculty, born of a very wide association with the leading men of his time, of knowing where to go for what he needed. This, combined with never failing tact and

unremitting labour produced the work of which he was so justly proud. Although it was the best known of his works *The System* was by no means the only one and everything with which he had to deal either as author or editor received the same meticulous attention.

Mr E K Martin writes: When Choyce first came to University College Hospital after the war he was a comparative stranger to its staff and an unknown quantity to the students. The whole time units were just starting in an artificial atmosphere with determination towards their immediate success and doubt as to their ultimate validity. The men returning from the war regarded the intrusion of women into the school with feelings of heat rather than warmth. In the emotional tension of 1919 and within the limited horizons of a medical school Choyce was a monument of kindly permanence. He was confident in his ideals and he liked to help his fellow men. In this sense men included women and his encouragement did much to widen the openings available to them in the hospital. Sympathy with youth was so natural to him that within a few years of his joining UCH he became the recognised confidant of anyone who wanted to talk over or seek advice on the current problems of his life. The annual residents' play never omitted a sympathetic caricature of Papa Choyce. On committees he was a counsellor of moderation and a mediator between differences of opinion. His exceptional capacity for the working out of detail has a permanent memorial in several of the recent buildings and reconstructions at UCH. This same grasp of detail combined with wide knowledge and a gentle power of persuading other people to fall in with his plans made his *'System of Surgery'* the most successful text book of its type in the English language. His surgical work was characterised by a wide knowledge of established procedure and a sound judgment of the men whom he had seen at work.

A friend and colleague of 30 years standing writes: C C Choyce was a man with many friends and no enemies; just the man to edit a *System of Surgery* for he could manage his team without the whip; just the man to run a surgical unit for he had no selfishness, no personal vanity and no axe to grind. He was a sound surgeon of good judgment with no fads or fancies, a sane teacher. His influence on those he taught will spread through the next generation as a healthy leaven.

Throughout most of his time at UCH Prof Choyce's health precluded much work in the operating theatre but with characteristic optimism he made of this disability which he so greatly regretted an opportunity for the encouragement and education of his successors. The courage and equanimity with which he faced the troubles which ill health threw upon him in his later years was the admiration of all who knew even a part of what these were. He was 61 years of age at the time of his death.

Prof Choyce married the daughter of Mr F C Dobbin at Chislehurst who survives him with a daughter and son.

ALEXANDER CORSAIR STURROCK M.D Fdin
M.R.C.P. Lond

THE death occurred at Eccles near Manchester on March 27th of Dr Alexander Sturrock consulting physician to the Salford Royal Infirmary and well known in the neighbourhood as a sound general physician especially well equipped in connexion with

mental disease. A son of the late Mr George Sturrock of Linlithgow he was educated at the University of Edinburgh where he took his degree in arts in 1892 secured a Vans Dunlop scholarship and graduated as M.B. Ch.B. with first-class honours in 1896. On proceeding to the M.D. degree two years later he obtained the gold medal. Having held resident appointments at the Grimsby Hospital and the Manchester Royal Infirmary he started in general practice in Eccles and in 1900 took the diploma of M.R.C.P. Lond. During the war with a commission in the R.A.M.C. he acted as physician to Sir Henry Norman's hospital at Wimereux; later he served for two years at Salonica was mentioned in despatches and retired with the rank of major. He now engaged in consultant work at Manchester and was appointed physician to the Salford Royal Hospital. Here he displayed his practical interest in mental disease organising an out-patients department at Salford in connexion with the county mental hospital at Prestwich.

Dr Sturrock occupied an important social position as a county magistrate, and an active politician with Conservative views. He was 65 years of age at the time of his death.

JOSEPH PEREIRA GRAY M.D Brux M.R.C.S

THE death of Dr Joseph Pereira Gray who died on March 13th in his sixty ninth year removed a much respected and well known figure from the city of Exeter in which he had practised for forty years.

Dr Gray studied medicine at Charing Cross Hospital, London and at Brussels taking the M.R.O.S. Eng. L.R.C.P. Lond. in 1894 and the M.D. degree of the University of Brussels with honours in 1903. He was a prominent figure in Exeter public life holding the appointments of police surgeon, medical officer to the City Hospital and the Exeter Children's Home, medical officer to the Southern Railway and visitor of Licensed Houses under the Lunacy and Mental Deficiency Acts. He was an honorary surgeon to the Exeter Dispensary for twenty five years serving on the committee on numerous occasions and later being elected consulting surgeon. He was keenly interested in ambulance work being the first surgeon to the Exeter City Division of the St John Ambulance which was founded in 1901 and remained its surgeon for very many years, obtaining the long service medal, and being elected honorary life member, lecturer and examiner to the St John Ambulance Association.

A man of untiring energy and with an attractive personality he had a very large general practice his chief characteristic being an unflinching kindness especially to his poorer patients.

GILBERT COCHRANE M.B. Glasg

THE death occurred recently at Birmingham General Hospital of Dr Gilbert Cochrane who had been M.O.H. of the Bromsgrove urban district for the last ten years.

He received his medical education at the University of Glasgow where he graduated in medicine in 1923. He held resident appointments at the Staffordshire General Infirmary and the Consumptive Sanatorium Bridge of Weir and settled in practice at Bromsgrove in 1926 when he was appointed M.O.H. of the Bromsgrove urban district and medical officer for the Bromsgrove Droitwich and Redditch joint isolation hospital. He was also medical officer to the Bromsgrove school and surgeon to the local

cottage hospital. The early termination of Dr Cochrane's professional career is a distinct loss to Bromsgrove and the district. His colleagues on the staff of the Bromsgrove cottage hospital recognised the soundness of his co-operation there, while his work at the isolation hospital was highly thought of by his authority. As M.O.H. of the enlarged Bromsgrove district his duties were carried out in a conscientious manner and marked by a high standard of efficiency.

GEORGE HERBERT SPENCER, M.R.C.S. Eng.

Dr G. H. Spencer, who died at his home at Newcastle after a brief illness on March 24th, practised

on Tyneside for over thirty years, first at Wallsend and afterwards at Newcastle. Born at Austerfield, near Doncaster, he received his medical training at the London Hospital, and qualified with the English double diplomas in 1900. He held resident appointments at the London Hospital and the Tynemouth Infirmary, and was then appointed surgeon to the Hospital for Sick Children at Newcastle on Tyne. Having previously held a commission in the R.A.M.C. (T.A.), he commanded the military hospital at Catterick camp during the war with the rank of lieutenant colonel, R.A.M.C. In the Tyneside he secured by skill and personal popularity a large connexion. He was 67 years of age at the time of his death, and leaves a widow and two children.

MEDICAL NEWS

Royal College of Surgeons of England

On Monday next, April 12th, at 5 p.m., Mr Philip Wiles will deliver his Hunterian lecture which was postponed. He will speak on postural deformities of the antero-posterior curves of the spine. Two Arris and Gale lectures will be given by Dr John Beattie at the same hour on Wednesday and Friday, April 14th and 16th. His subject will be the anatomical and physiological relations of the hypothalamus and pituitary gland.

Society of Apothecaries of London

The May examinations for the diploma of the mastery of midwifery will be held on Tuesday, Wednesday, and Thursday, May 18th, 19th, and 20th, instead of on the dates previously announced.

University of Aberdeen

At a graduation ceremony held on March 31st the hon. degree of LL.D. was conferred on Mr Naughton Dunn, surgeon and lecturer in orthopaedic surgery in the University of Birmingham. The diploma in public health was conferred on Robert Fraser and S. T. G. Gray.

University of Dublin

At recent examinations at the School of Physics, Trinity College, the following candidates were successful—

FINAL MEDICAL EXAMINATION FOR M.B. B.O.H. B.A.O.

Part I

Therapeutics and Pathology—Myer Herman, G. E. Nevill (first-class honours), F. D. F. Steede, Isabella M. Dorman (second-class honours), Thaddeus Fallon, F. H. Counihan, Deborah Bloom, Bernard Kernoff, H. M. Buchanan, M. F. N. Slattery, J. L. Mans, J. W. Cathcart, T. W. Hanna, Jack Morris, Nathan Marks and Mary Conyngham.

Part II

Medicine—William Hayes, H. F. Sloan, O. M. Harrison, Sterling Tomlinson, G. K. Donald, R. W. Duncan, C. J. S. Flood, Rebecca M. R. Pike, H. M. Carson, and F. J. B. Convery. *Surgery*—Ellen D. Maunsell, J. G. Steinbock (second-class honours), P. J. Mullane, Cecil Mushatt, G. C. Retz, D. S. Toole, J. J. B. Convery, J. G. Cunningham, D. J. H. Douglas, P. L. van Aardt, A. J. Reeves, John McQuillan, and Max Levy. *Midwifery*—E. M. Cochrane, G. N. MacFarlane, M. C. Brough, R. E. Taylor, H. J. Walker (first-class honours), W. T. Kenny, J. C. Lambkin, J. E. Gillespie, Stella M. Coen, C. G. Reilly, Charles Cunningham, I. A. Strong, Jasmine Taylor, F. C. Heatley, H. F. T. MacFartridge (second-class honours), M. C. Warneck, F. A. Hanna, A. D. Parsons, Robert Pollock, Jack Freedman, D. G. Harrison, Grace M. Wild, J. N. G. Drury, Patricia M. J. Conway, J. G. Nixon, J. B. Plews, S. G. Heaton, M. G. Wood, J. H. Mitchell, J. R. Steen, Ronald Brass, C. M. Ludlow, and Samuel Rubin.

P.H.H.

Part I—T. A. Austin, Emily M. Booth, H. W. Dalton, and Mary S. Miller.

D.O.O.

Koppel Tatz, M. M. Kriesman, Amla Wassef, and V. D. Lesplasse.

D.P.M.

Part II—H. J. Eustace.

University of Sheffield

At recent examinations the following candidates were successful—

FINAL EXAMINATION FOR M.B. CH.B.

Part II and III—Margaret G. Bell (with first class honours), Ronald W. Elliott, Edmund Schutz, David Shapiro, Ian B. Needon (with second-class honours), Sydney R. Allington, George K. Burton, Harry Cullumhine, Sadallah Khall, Arthur Naylor, Morris J. Pirawer, and George E. Robinson.

Prof Archibald Young and Dr J. G. McCutcheon have been appointed deputy lieutenants of the county of the City of Glasgow.

University of Birmingham

Five William Withering lectures on nutrition and nutritional disorders will be given at the University during April and May. The first lecture will be given by Prof W. N. Haworth, D.Sc., on April 22nd, the next two by Prof J. C. Drummond, D.Sc., on April 29th and May 6th, and the last two by Prof L. G. Parsons on May 11th and 13th. All the lectures will be at 4 p.m. in the medical faculty buildings, Edmund street, and members of the medical profession and students are invited to attend.

Institute of Medical Psychology

Twenty lectures on psycho-physical adaptation will be given at the Institute on Thursdays at 3 p.m. by Dr Hugh Crichton Miller and at 4.30 p.m. by Dr Cedric Shaw from April 22nd to June 24th. Further information may be had from the educational secretary of the Institute, Malet-place, London, W.C.1.

British Health Resorts Association

Next Saturday, April 17th, this association will hold a conference at Skegness. The first discussion will be on Industry and the Health Resort, to be opened by Mr A. L. Peterson, speaking as an employer, followed by Mr Ernest Bevin and Dr L. P. Lockhart. The second will be on Games, Sport, and Sea bathing in relation to Health and the speakers will be Sir Kaye Le Fleming, Dr R. Cove Smith, and Dame Louise McIlroy. The association, whose secretary is Dr Alfred Cox, may be addressed at 199, Piccadilly, London, W.1.

St George's Hospital a New Psychiatric Department

The treasurers of the hospital have received an anonymous gift of £5000 towards the cost of buildings and equipping a psychiatric department in the new hospital. In a letter accompanying the gift, the donor says: "St George's Hospital deserves active public support in its decision to establish a large scale psychiatric clinic. The benefit to patients, staff, and students of making such a clinic part of a general hospital cannot be too strongly stressed."

Mothers' Clinics

The annual Spring Ball in aid of the Mothers' Clinics will be held at Clardge's Hotel on Tuesday, May 18th. Dr Marie Stopes, founder in 1921 of the Mothers' Clinics, will be chairman, and among other members of the committee and patrons are Mr Lloyd George, Mrs Stanley Baldwin, the Duchess of Atholl, Miss Lilian Brathwaite, Dr Harnette Chick, Lady Bertha Dawkins, and Sir Alfred Knox. The tickets are £2 2s each and may be obtained from Dr Marie Stopes, Norbury Park, Dorking, Surrey, Mrs Stallard, 108 Whitfield street, W.1, or from Clardge's Hotel. They cover the cost of the dinner and the buffet, which will be running during the dancing. A cabaret and sideshows have been arranged.

Mr Philip Franklin has been elected hon vice-president of the American Institute for the Deaf Blind

Auxiliary Royal Army Medical Corps Funds

The annual meeting of the members of the funds will be held at 5.15 p.m. on Friday April 23rd, at 11 Chandos street London W

Royal Institution

On Friday April 16th at 9 p.m. a lecture will be given at the institution 21 Albemarle-street London W by Mr T. Macara, F.I.C. who will speak on science and the conservation of food

Queen's University Club London

The spring dinner of this club will be held in the Dorchester Hotel on Thursday April 22nd. Further information can be obtained from the secretaries 101 Harley-street W 1

University of London Medical Graduates Society

The annual dinner of this society will take place in the new buildings of the University at Bloomsbury on Thursday May 6th at 7.45 p.m. The guests of honour will be Mr H. L. Eason, Vice-Chancellor of the University, and Mr W. Gillingham, dean of the faculty of medicine. The annual general meeting of the society will be held before the dinner at 7 p.m. in the University. The society may be addressed at 11 Chandos-street W 1

Ophthalmological Lectures at University of Glasgow

A short course of lectures will be given at 5 p.m. on Tuesdays from April 20th to May 18th at the Tennent Memorial Building Church-street Glasgow. The lectures will deal with leading symptoms in ophthalmology and the lecturers will be Prof. A. J. Ballantyne, Dr. Chesser Macleod, and Dr. John Marshall. All interested are invited.

Preventive Paediatrics

The Association Internationale de Pédiatrie Préventive which is the medical section of the Save the Children International Union, has deferred till September its annual conference which was planned to take place in Rome this Easter. The reason is that the International Child Welfare Congress, which was to have met in Rome at Easter has been postponed to September. The secretary of the association may be addressed at 15 rue Lévrier Geneva.

National Association for the Prevention of Tuberculosis

The King has consented to become patron and the Duke of Kent president of this association which was founded by King Edward VII as Prince of Wales in 1898. The chairman is Sir Robert Philip who fifty years ago established in Edinburgh the first tuberculosis dispensary in the world.

The twenty-third annual conference of the association will be held in Bristol from July 1st to 3rd. The chief subjects for discussion will be propaganda and publicity, methods, preventive institutions with particular reference to open air schools, and the equipment and activities of a tuberculosis dispensary. Further information may be had from the acting secretary-general of the association Tavistock House North Tavistock-square London W.C. 1

Fellowship of Medicine and Post Graduate Medical Association

All-day courses during April and May will be as follows: neurology at the West End Hospital for Nervous Diseases (April 19th to 24th), proctology at the Gordon Hospital (April 20th to May 1st), and psychological medicine at the Maudsley Hospital (April 28th to May 20th). Afternoon courses will be given in dermatology at the St. John's Hospital (May 3rd to 20th) and in thoracic surgery at the Brompton Hospital (May 24th to 29th). Week-end courses will be held in infantile diseases at the Infants Hospital (April 24th and 25th), in cancer at the Royal Cancer Hospital (April 24th and 25th), in chest diseases at the Brompton Hospital (May 8th and 9th), in physical medicine at the St. John Clinic and Institute of Physical Medicine (May 22nd and 23rd), and in children's diseases at the Princess Elizabeth of York Hospital (May 20th and 30th). Further information may be had from the Secretary of the Fellowship, 1 Wimpole-street W.

A Congress on Hormones

The Journées médicales internationales de Paris will be held from June 26th to 30th under the patronage of the *Revue médicale française*. The subject for discussion will be the biological, clinical and therapeutic aspects of hormones. Prof. Paul Carnot will preside and the secretary-general is Dr. Godlewski.

National Institute of Industrial Psychology

After considering what steps should be taken to cope with the increasing work of this institute the council has appointed Mr. T. G. Rose, M.I.N.E.E. general director. He will collaborate with Dr. C. S. Myers, F.R.S., the principal who will retain the position held by him since the institute opened 16 years ago. The address is Aldwych House Aldwych London, W.C. 2.

King's College Hospital

During the evening service at 5.30 p.m. on Sunday April 18th a plaque will be unveiled in King's College Hospital chapel to the memory of Dr. Harold Wiltshire formerly one of the physicians to the hospital. At the same service the endowment of a bed in memory of Mr. Albert Carless who was actively associated with the medical school and hospital for nearly 40 years will be offered by his wife. The address will be given by his friend the Rev. Howard Banister vicar of Wallington Surrey.

Progress of Cremation

In the annual report presented to the Cremation Society recently it is stated that whereas ten years ago there were 16 crematoria with 2877 cremations the numbers last year were 33 and 11,289 respectively. The society whose headquarters are at 23 Nottingham place London W 1 conducts propaganda in favour of cremation and makes arrangements for registration of the desire to be cremated and for assurance against the cost. The International Cremation Congress is to be held for the first time in England this autumn meeting in the Guildhall London from Sept. 24th to Oct. 2nd. The National Association of Cemetery and Crematorium Superintendents holds its twenty-second annual conference at Torquay from June 28th to July 1st.

Rate Burdens on Hospitals

Emphatic protests against the crushing burden of rates on voluntary hospitals, coupled with appeals from the various institutions for a system of differential rating were made at the recent annual meetings of the Brighton hospitals. It was stated at the court of governors of the Royal Sussex County Hospital the largest hospital in the town that 6s. in every £ received in subscriptions had to be paid away in rates, and the other institutions had similar experience in 1936 in proportion to their size. At the annual meeting of one of the hospitals the mayor defended the position by stating that the law forbade the authorities to do anything in the way of differential rating. Brigadier-General d'A. C. Brownlow chairman of the governors of the Royal Sussex County Hospital, replied to this statement by giving figures regarding the rating of hospitals in other parts of the country and asked for an explanation of the difference. He found he said that the 1650 beds in Sussex hospitals were valued at an average of £7.13. In the adjoining counties, including Canterbury, Tunbridge Wells, Guildford, Winchester, Portsmouth, and Southampton, 1574 were rated at £3.64 per bed. Further afield at the large hospitals of Bristol, Birmingham, Hull, Liverpool and Sheffield 6995 beds were rated at an average of £1.81. This the chairman said showed that some rating authorities had found a way of giving preferential treatment to their voluntary hospitals. Replying to a suggestion that the corporation be asked to return the rates in the form of an annual donation if it were impossible to reduce the assessment he said the authorities had power to contribute to hospitals up to 1.2d. in the £. The governors had never asked the corporation to make such a donation and it had never been volunteered. He added that he believed Portsmouth returned the whole of the rates in the form of a grant.

Queen's Hospital for Children Hackney-road, L—H.S. at rate of £100. Also Clin. Asst. for Med. Out-patient Clinics 6s. per attendance.

Reading Royal Berkshire Hosp—H.S. Cas. O also H.S. to Spec. Depts. each at rate of £150

Rochester St. Bartholomew's Hosp—H.S. at rate of £150

Rochester Hosp—Hon. Anesthetist

Royal Chert Hosp City road E.C.—Res. M.O. at rate of £150 also Med. Res.

Royal College of Physicians Pall Mall East S.W.—Proprietor Scholar £100

Royal Free Hosp. Gray's Inn road, W.C.—Asst. Physician to Dept. of Physical Medicine. Also Res. Asst. Pathologist

Royal Naval Medical Service—M.O. A.

Royal Northern Hosp. Holloway A.—H.S. at rate of £70

Royal Waterloo Hosp. for Children 40, Waterloo-road, S.E.—H.S. Cas. O and H.P. at rate of £150 and £100 respectively

Salisbury General Infirmary—H.S. M.O. £250

Sheffield Children's Hospital—H.S. at rate of £100

Sheffield Jessop Hosp. for Women—H.S., at rate of £100

Sheffield Royal Hosp—Clin. Asst. to Ophth. Dept. £300

Sheffield University Dept. of Bacteriology—Asst. Bacteriologist and Demonstrator, £500

Shrewsbury Royal Salop Infirmary—Res. H.P. at rate of £150

Stearns Metropolitan Borough—Deputy and Asst. M.O.H. £750

Sunderland Royal Infirmary—Cas. O £150. Also two H.S.s each £150

Surrey County Council Mental Hospital's Service—Jun. Asst. M.O.s each £250

Swanley, Kent, Hosp. Convalescent Homes Parkwood—Res. M.O. at rate of £200

Swansea Adeline Hall Hosp—H.P. at rate of £150

Swansea General and Fyfe Hosp—Cas. O at rate of £150—£175

Swindon Borough—Deputy M.O.H. and Asst. School M.O. £600

Taxford and Somerset Hosp—H.S., at rate of £100

Torquay Torbay Hosp—H.S. and H.S. each £175

Victoria Hosp. for Children 211e-street S.W.—Cas. O at rate of £200

Wallasey Victoria Central Hosp—Jun. H.S. £150

W. Cam. Bromwich Hallam Hosp—H.P. at rate of £300

Western Ophthalmic Hosp. Marylebone road, W.—Jun. Res. H.S. £100

Westminster Hosp. Broad Sanctuary S.W.—Asst. M.O. in X-Ray and Electrical Dept.

Willesden General Infirmary—H.S. at rate of £250

Wickford Essex Torquay Hosp—Asst. Res. Physician £350

Windsor Royal Hampshire County Hosp—H.S. at rate of £150

Wolverhampton Royal Hosp—H.S. each at rate of £100

Woolwich Arsenal Memorial Hosp. Shooter's Hill, S.E.—H.P. and H.S. each at rate of £100

York Dispensary—Res. M.O. £175

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Newport (Monmouth), Edgware (Middlesex), Paisley (Renfrew), Kilmid (Renfrew), and Ayr (North Ayrshire).

Medical Referee under the Workmen's Compensation Act 1925 for the Dewsbury, Leeds, Otley and Wakefield County Court Districts (Circuit No. 14). Applications may be made to the District Private Secretary, Home Office, Whitehall London S.W. 1 before April 26th.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1 Wimpole-street W.
Monday, April 12th
 8.15 A.M. Services 4.30 P.M. Annual General Meeting
 Surg. Commander J. C. Boulter. Fungus Infection of the Skin of the Feet

TUESDAY
 Psychiatry 8.30 P.M. Dr C. P. Symonds. Mental Disorder following Head Injury

FRIDAY
 Physical Medicine 3.30 P.M. (at John Clinic and Institute of Physical Medicine, Blandford-road S.W.)
 Annual General Meeting 4.30 P.M. Demonstrations and cases.

Ophthalmic and Gynaecology 8 P.M. Dr F. Ward. William. Infection in the Cornea. Cter. Dr R. A. Wilson (New York). Prevention of Aphythial Death in the New born (with film)

Otolaryngology 8.30 P.M. Dr Courtney Gage and Dr H. C. (with film). Lectures on Special Methods of Investigation of the Alimentary Tract. Dr R. B. Paterson and Dr G. B. Bush will also speak.

BRITISH INSTITUTE OF RADIOLOGY 3, Welbeck-street W.
Thursday, April 15th—8 P.M. Dr M. H. J. J. The Relation of the Bones of the Skull to Intracranial Lesions

HARYFAN SOCIETY
 Thursday, April 15th—8.30 P.M. (at Portland place W.)
 Dr John Thaxter: Some Causes of Pulsen Death—Common and Uncommon—from the Medical-Legal Standpoint

HUNTERIAN SOCIETY
 Monday, April 17th—8.30 P.M. (Symposium: Restaurant, Champs-Élysées). Annual General Meeting. Dr L. Haden Guest: Air raid Precautions

SOCIETY FOR THE STUDY OF INEBRIETY
TUESDAY, April 13th—4 P.M. (11, Chancery-street, W.)
 Dr John Dent: The Environmental Factors in the Causation and Prevention of Alcoholism.

NORTH LONDON MEDICAL AND SURGICAL SOCIETY Royal Northern Hospital, Holloway-road N.
FRIDAY, April 16th—8.15 P.M. clinical evening

PADDINGTON MEDICAL SOCIETY
TUESDAY, April 13th—9 P.M. (Great Western Royal Hotel, Paddington) Dr T. C. Hunt: The Abdominal Quarte (Colon, Appendix, stomach and Gall bladder)

SOUTH WEST LONDON MEDICAL SOCIETY
WEDNESDAY, April 14th—9 P.M. (Bolingbroke Hospital, Wandsworth Common) Dr C. M. Mullins: Marriage the Doctor and the Police-court

LECTURES AND DEMONSTRATIONS &c.

ROYAL COLLEGE OF SURGEONS OF ENGLAND Lincoln's Inn fields, W.C.
Monday, April 12th—5 P.M. Mr Philip Wiles: Postural Deformities of the Antero-posterior Curves of the Spine (Hunterian lecture)

WEDNESDAY AND FRIDAY—5 P.M. Dr John Beattie: The Anatomical and Physiological Relations of the Hypothalamus and Pituitary Gland (Annis and Golelectures)

BRITISH POSTGRADUATE MEDICAL SCHOOL Duane-road W.
Monday, April 12th—3.30 P.M. Dr C. W. Buckley: Arthritis

WEDNESDAY—Noon clinical and pathological conference (medical) 2.30 P.M. Dr Gray: Diagnosis of Malignancy 3.15 P.M. clinical and pathological conference (surgical) 4 P.M. Dr J. E. H. Roberts: Surgery of the Chest 5.30 P.M. Dr W. E. Gye: Experimental Cancer Research

THURSDAY—Noon clinical and pathological conference (obstetrical and gynaecological) 2.30 P.M. Dr Duncan White: Radiological demonstration 3.30 P.M. Mr A. K. Henry: Demonstrations of the Cadaver of Surgical Exposures 3.30 P.M. Mr Wilfred Shaw: Irregular Uterine Hemorrhage

FRIDAY—3 P.M. operative obstetrics 3 P.M. department of gynaecology pathological demonstration

Daily 10 A.M. to 4 P.M. medical clinics surgical clinics and operations, obstetrical and gynaecological clinics and operations.

WEST LONDON HOSPITAL POST GRADUATE COLLEGE Hammersmith
Monday, April 12th—10 A.M. Dr Post X-Ray Film Demonstration, skin clinic 11 A.M. surgical wards 3 P.M. operations, surgical and gynaecological wards medical surgical, and gynaecological clinics 4.15 P.M. Mr Arnold Walker: Speech Presentations

TUESDAY—10 A.M. medical wards 11 A.M. surgical wards 2 P.M. operations, medical surgical and throat clinics 11 P.M. Dr Hambley Thomas: Rhinitis including Hay-fever

WEDNESDAY—10 A.M. children's ward and clinic 11 A.M. medical wards 2 P.M. gynaecological operations medical surgical and eye clinics 4.15 P.M. Mr Gibb: Demonstration of Eye Cases

THURSDAY—10 A.M. neurological and gynaecological clinics Noon fracture clinic 3 P.M. operations medical surgical and genito-urinary and eye clinics

FRIDAY—10 A.M. medical wards skin clinic Noon lecture on treatment 2 P.M. operations medical surgical and throat clinics

SATURDAY—10 A.M. children's and surgical clinic 11 A.M. medical wards

The lectures at 4.15 P.M. are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION 1 Wimpole-street W.
Monday, April 12th to **Saturday, April 17th**—ROYAL FREE HOSPITAL, St. George's-street S.E. afternoon course in ophthalmology—Wed. and Thurs. ph. surgery course at various hospitals—PARK HOSPITAL, Hilditch-grove S.E. Sat. and Sun. course in infectious diseases—These courses are open only to members of the Fellowship

NATIONAL HOSPITAL FOR DISEASES OF THE BLIND Westminster-street W.
Tuesday, April 12th—5.30 P.M. Dr T. J. Cotton: Some Clinical Aspects of Microbial Di. case

HOSPITAL FOR SICK CHILDREN Great Ormond-street W.C.
Thursday, April 15th—2 P.M. Dr Reginald Lightwood: Interpretation of Skull Enlargement. 3 P.M. Dr A. Higny: Modern Aspects of Diphtheria

Out-patient clinics daily at 10 A.M. and ward visit at 2 P.M.

HOSPITAL FOR FILLIPIA AND LARALIA 14, Maid Vale

Thursday, April 22nd—3 P.M. Dr Wilton: Demonstration at JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE 4, Blandford-road S.W.

Friday, April 16th—4.30 P.M. Demonstration of cases by members of the St. Vincent staff

MANCHESTER ROYAL INFIRMARY
Tuesday, April 13th—4.15 P.M. Dr A. Ham: 1 item Infections of the Gall bladder

Friday, April 16th—11.30 P.M. Dr H. Newell: Demonstration of Surgical Cases

GLASGOW POST GRADUATE MEDICAL ASSOCIATION
Wednesday, April 14th—4.15 P.M. Lect. at Hospital Dr David Watson: Venereal Disease in Women

NOTES, COMMENTS, AND ABSTRACTS

MUSIC IN THE FACTORY

(BY AN OCCASIONAL CONTRIBUTOR)

IN tackling seriously the subject of boredom in industrial workers the Industrial Health Research Board¹ has undoubtedly come to grips with one of the major problems of modern life for here, at bottom, lies the secret of strikes, revolutions, wars and the rumours of wars. The bulk of humanity have had to sell their birthright for a mess of pottage and no wonder they have proved fractious and discontented bargainers. The replacement of craftsmanship by mass production has bereft many of the individuality which was a sufficient compensation for poverty. The carver of Chippendale chairs or the moulder of Chelsea figures had probably to work long, hard and for little gain, but he had also the never failing satisfaction of seeing his own work and of knowing that it was good.

The investigations dealt with in a recent report on boredom in repetitive industry are conceived on the simple lines no doubt essential in the preliminary study of such a complex problem as this. The subjects of the investigations were four groups of factory girls working at chocolate packing, cracker making, and "tying small blocks in calico." These jobs are no doubt deadly dull, but not more so than those which engage the majority of factory workers. A short questionnaire was devised, the answers to which were calculated to give some general idea of the psychological reactions of the worker to her work. The outcome of the inquiry can be anticipated, but it is none the less pitiable. Of 355 workers, only 3 per cent expressed no sign of boredom, 83 per cent were slightly affected, 38 per cent experienced a moderate degree, and 26 per cent suffered severely. Temperamental differences accounted for a good deal of variation in the amount of boredom suffered, and, understandably enough, the more intelligent type of worker suffered most severely. It is possible that women, who look elsewhere than in hired work for the fulfilment of their lives, suffer more than men, but many of them have their day-dreams for compensation. Men on the other hand are more given to kicking against the pricks and they shoulder their burden knowing it will stay with them while health and life last. The writers of the report study many causes of discontent among workers. Questions of promotion, security, supervision, wages, hours of work, &c., have all their contributory effects, but the radical remedies for these are matters too inflammable to be the subject of official reports. The investigators make, however, one valuable positive contribution to the prevention of boredom in industry. They found that gramophone records played at chosen periods during the day had a marked alleviating effect on the symptoms. Almost all the workers, we are told, "responded to the music by an increased output." The average increase in output while the music was actually being played was 6.2 to 11.3 per cent.

An inquirer of another age might well wonder why the ingenuity of psychologists could not have devised a more delicate test for human contentment than an increased output of chocolate boxes, but we are in a century when the still small voices of humanity are liable to be drowned in the clash of machinery and the rattle of cash registers. Music the antidote to misery—an old theme with ever new application! The caged linnets sing away its captivity. The chain gangs and the galley slaves sang their rhythmic

catches as they strained and sweated. The old mariners found their shanties helped them to weigh the anchor and to endure their hardships. The negroes in the cotton fields, no doubt, increased their output in bales with their plantation songs and the Volga boatmen who, if music and elementary geography go for anything, lived a hard and bitter life, probably got a 10 per cent increase in speed by singing their stirring boat-song. But now when division of labour is an inexorable law and the discipline of the factory has advanced beyond that of the chain gang, the music too is no longer individual but must be provided by mechanical devices.

There is music like the Liebestod from *Tristan* or the last movement of the Fifth Symphony which must be received head between hands and in semi-coma. The investigators who, no doubt, had shareholders to consider made no experiments with this kind of music. Of the types they tried "light orchestral music" seems to have had least effect and this we take as welcome evidence that our factory girls, though sore beset, have still sturdy souls. It was the youthful and stimulating music which goes by the name of "jazz" or "rhythm" that was found to be the best antidote to boredom. "It is generally agreed" say our investigators gravely, "that rhythm induces a pleasant emotional effect which acts as a more favourable background for production." But we should like to have more precise details as to the nature of the successful music. The investigators give the impression that a studious and sheltered life may have made them insensible to the finer distinctions of rhythmic music. It is not enough to classify their records as waltzes, one-steps, or fox-trots. There are fox-trots and fox-trots, and dance bands and dance bands, and of this an industrial psychologist could convince himself if he compared the incomes of the "kings of jazz." Is the output as great with the music of Duke Ellington as with that of Irving Berlin? We can imagine shuffling chocolates to Ellington's nocturnal measures, but not packing them. The astute psychologists of Radio-Normandie seem to find that the Blue Danube and the Lily of Laguna, old as they are, have a specially potent effect in helping mothers of families through their daily chores and in keeping them diligently dosing their children with vitamins, laxatives, and antacids. The Blue Danube may suit the mangle vat fail with "tying small blocks in calico." There is obviously a field for further inquiry here and the services of Mr. Charles Cochrane, Mr. Ambrose, or Mr. Roy Fox might be advantageously co-opted for the investigation.

But, when all is said, this question of boredom in the modern world is a desperately serious and important affair and well worth the continued attention of the Industrial Health Research Board. There is much to be done and it is satisfactory to see that a good start has been made. The medical man, himself a worker who, whatever his misfortune, rarely knows boredom, may well be moved, by the picture given in this report of the soul under the industrial system, to see, as it were, the naked nerve touched by the experimenter's probe. But let us look back too regretfully to the simple life of the old world, let us quote from another observer as impersonal as the writer of government reports and infinitely more callous—

"certains animaux farouches, des mâles et des femelles répandus par la campagne noirs, livides et brûlés du soleil attachés à la terre qu'ils fouillent et qu'ils remuent avec une opiniâtreté invincible ils ont comme une voix articulée, et quand ils se lèvent sur leurs pieds, ils montrent une face humaine et en effet, ils sont des hommes."

And there were no gramophones, radios, cinemas or football pools under the old regime.

¹ Fatigue and Boredom in Repetitive Work. By S. Wyatt and J. N. Langdon (assisted by F. G. L. Scott). Medical Research Council Industrial Health Research Board. Report No. 77. H.M. Stationery Office. 1937. Pp. 77. 1s. 3d.

mothercraft ranging from the onset of pregnancy to the character training of toddlers. It is essentially a practical book and the author does not theorise, but in places it is perhaps too complicated and full of alternative suggestions for the average mother or child's nurse, but monthly and welfare nurses, for whom also presumably it is written, will not find this a defect. In the chapter on infant feeding it is surprising that whereas such things as peptonised feeding are described in some detail no mention is made of lactic acid milk. Excellent emphasis is laid upon the importance to the infant of fresh moving air and the correct balance of rest and exercise. The last few chapters are devoted to a discussion of childish ailments, accidents, and illnesses, and contain much sound advice. There is a chapter dealing with the care of infants in the tropics, a short bibliography, and a good index.

We are informed that nearly two hundred thousand copies of this book have been sold, it remains one of the best of its kind.

MEDICAL ACTIVITIES FOR LAY READERS

THE increasing popular demand for superficial knowledge on various topics fostered by certain organs of the press and not altogether discouraged by the B.B.C. has produced a spate of small books of which a typical example is one entitled *Science Fights Death*. Herein the progress and problems of modern medicine are thinly though not inaccurately discussed in non-technical language. Bacteriology and infectious diseases, parasitology, virus diseases, the endocrines, plastic surgery, industrial and blood diseases and the cancer problem are some of the things touched upon, the author is to be forgiven if he has chosen the more cheerful and dramatic themes, for it is well known that laymen are always more interested in the potentialities of a subject than in its limitations. Moreover, the doctor lured, however unwillingly perhaps, at a dinner-party to talk about his job, might do worse than take this book as a model of how to "put over" snippets of information in a manner calculated not to bore the casual listener.

NEW PREPARATIONS

ACROSONE—The advantages claimed for this antiseptic are that it is neither poisonous, irritating, nor corrosive, giving a relatively clear solution in water and having a Rideal-Walker coefficient of 13. It is slightly oily, and thus discourages adhesion of dressings to wounds. For the sterilisation of instruments immersion in a 20 per cent solution for ten minutes is said to suffice. The use of Acrosone is also advised for cleaning septic wounds, for vaginal douching for sterilisation of hands and skin for rinsing ulcerated mouths, and for treating cutaneous sepsis. It is made by James Woolley Sons and Co., Ltd., Victoria Bridge Manchester 3.

BILRON is a mixture of iron and bile acids in the form of ferric bile acids. It is soluble in alkaline solution, but almost insoluble in water and acid media and it may therefore be taken by mouth without special enteric coating. Its administration is suggested wherever stimulation of secretion of bile is desired—e.g., in dyspepsia due to hepatic insufficiency and in some forms of constipation and of migraine—and also during surgical drainage of the biliary tract. The manufacturers of Bilron (Eli Lilly and Co., Ltd., 2, Dean-street, London, W 1), refer to unpublished observations by Kohlsaadt and Rosenak on the usefulness of iron bile salts in cases of cholecystitis without stones. The product is sold in 5 grain Pulvules (filled capsules).

SOLUSITASIN a product of Pharmaceutical Specialities (May and Baker) Ltd., Dagenham, is disodium *p* (4-phenylpropylamino) benzenesulphon-

amide- α , γ -disulphonate. It is supplied in ampoules in 5 per cent solution and recommended by the makers for intravenous or intramuscular injection in the treatment of severe streptococcal infection.

VITEOLIN is the name now given by Glaxo Laboratories Ltd. (Greenford, Middlesex) to their wheat-germ oil extract. They have issued a booklet entitled "Vitamin E" which gives an account of the clinical use of this vitamin especially in the treatment of repeated and threatened abortion. The extract is described as a twenty-five fold concentration of the vitamin E in wheat-germ oil, and it is put out in 3-minim capsules.

ORHEPTAL—E. Merck, of Darmstadt, have prepared a new tonic for use in cases of secondary anaemia, during convalescence and in conditions of weakness and loss of tone. Besides a concentrated liver extract, it contains ferric ammonium citrate, cupric chloride, tincture of nuxvomica, sodium and manganese glycerophosphate, caffeine, and small quantities of quinine, bitters, alcohol, and syrup. It is obtainable in this country from Savori and Moore Ltd., 61, Welbeck-street, London, W 1.

A pamphlet on "Ovarian Hormones in Clinical Practice" is issued by BOOTS PURE DRUG CO. LTD. (Nottingham). It gives particulars of the Boots preparations of oestrone benzoate (Ovostab) and corpus luteum hormone (Luteostab) and illustrates the use of these substances by quotations from published papers.

WANTED, A CASE OF BILIARY FISTULA—MR. ABERD, who is investigating the effect on the liver secretion of various medicinal waters, would be glad to find a case of biliary fistula willing to undergo such a test. All expenses would be paid.

Births, Marriages, and Deaths

BIRTHS

- AMUD**—On April 4th at Blackpool the wife of Dr J. Wilson Aird of a son.
BLACK—On April 1st 1937 at Leeds to Stella wife of George Black, F.R.C.S. of 26 Park square, Leeds—a son.
CONSTAD—On April 3rd at Welbeck street W, the wife of Dr Victor Constad of a daughter.
DANNATT—On March 24th, at the Middlesex Hospital, W the wife of Mr R. M. Dannatt F.R.C.S. Eng. of a son.
HARTLEY—On March 29th at Rye, Sussex the wife of Dr J. L. Hartley of a daughter.
JAMES—On March 25th the wife of T. G. Illyd James F.R.C. of a son.
JOHNSTONE—On April 2nd, at Leicester the wife of Mr A. Johnstone F.R.C.S. Edin. of a daughter.
McCONNEL—On April 2nd at Welbeck street W the wife of Dr R. W. McConnell, Wendover, Bucks, of a son.
TURNER—On March 23rd at Bracknell Berks the wife of Dr Ronald Turner of a son.

MARRIAGES

- BETTFY-SANDERS**—On March 31st at St. Peter's, Croydon F. Ray Bettfy M.D. of Croydon to Mary Stewart only child of Robert Stewart Sanders formerly of Parley.
BOWES-WHITTON—On March 31st at the Church of the Annunciation, Bryanston street W. Robert Wallace Bowes M.A. M.R.C.S. of Miss Norfolk to Gen. Mary Whitton M.Com. (Vict.) Seymour street London W.
LANGTON-WHITE—On April 3rd at St. Mary's Church Scarborough Peregrine Stephen Brackenbury Langton M.B. Medical Superintendent of the Royal Earlswood Institution Redhill Surrey to Vera Dennis White young daughter of Mr F. A. White of Scarborough.

DEATHS

- BRISCO OWEN**—On March 24th Ella Gertrude Brisco-Owen L.M.S.A.
N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

ADDRESSES AND ORIGINAL ARTICLES

POSTURAL DEFORMITIES OF THE
ANTEROPosterIOR CURVES OF THE
SPINE *

Dr PHILIP WILES M.S. Lond. F.R.C.S. Eng
ASSISTANT ORTHOPÆDIC SURGEON TO THE MIDDLESEX
HOSPITAL, LONDON

The generally accepted views of the physiology of the neuromuscular system so far as they concern posture have undergone considerable modification of recent years. Before discussing them however it is necessary to emphasise a fact that should be a commonplace—the ligaments play no part at all in the normal regulation of posture. Over a hundred years ago Delpech (1828) a French orthopædist drew attention to this fact, but its general acceptance has been very slow. The function of ligaments is to limit the extremes of movement, and no loss of stability need occur when they are absent as may be seen after complete excision of the capsule of the hip joint.

The function of skeletal muscles is to cause movement and to maintain posture but an individual muscle fibre is capable only of one thing the development within itself of a state of tension. Its behaviour when the tension develops depends on conditions external to itself. If there is no resistance to its movement, the fibre contracts. If there is resistance which it is unable to overcome movement is absent or minimal and the contraction is said to be isometric. The former process is used in making movements the latter in maintaining posture. Individual fibres appear to follow the all or none law so the power exerted by a whole muscle is proportional to the number of fibres in action. This in turn depends on the external resistance to be overcome and the rapidity of the movement consequently for the maintenance of posture the number of fibres required at once may be very small.

Each muscle-fibre or small group of fibres is separately supplied by motor nerves which can transmit impulses of only one type and in one direction. For the purpose of maintaining posture muscular power and therefore the number of fibres in use at once is comparatively small so that continual change of contracting fibres can occur and fatigue is reduced to a minimum. This is clearly shown in records of the action currents which are produced during the active contraction of a muscle. A fine double electrode is inserted into the substance of the muscle the current is amplified made visible by means of a cathode ray oscillograph and photographed on a moving film. The currents are of a moderately small order and only such as are produced by muscle fibres in the immediate neighbourhood of the electrode are detected. Dr C. A. Keeler of the department of physiology at the Middlesex Hospital Medical School, has been kind enough to assemble the apparatus and coöperate in making a number of observations.

In Fig. 1 are records of action currents in the central portion of the gluteus medius. When the leg was supported so that the muscle was completely relaxed action currents were absent or only occasionally recorded (above). When the subject was standing with both feet on the ground so that the muscle was engaged in maintaining normal upright posture, contractions were fairly frequent but not absolutely

regular (middle). During active muscular contraction violent activity is recorded (below).

The process of maintaining posture requires the balanced contraction of the muscles on each side of the joint concerned—that is in the upright position nearly every joint in the body. The regulation of this complicated process is entirely a function of the central nervous system. It is brought about mainly

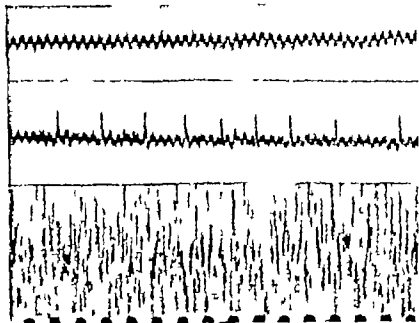


FIG. 1.—Action currents of central portion of gluteus medius. Above: leg supported and muscle fully relaxed. Middle: standing still with legs 6 in. apart. Below: standing on one leg.

by means of unconscious reflexes which coordinate afferent impulses from the muscles joints eyes ears and skin.

A permanent change in habitual posture is not maintained by the muscles on one side of the joints concerned contracting more strongly whilst those on the other side are more relaxed. This process only causes the movement by which the new posture is reached. Once it is reached, all that is necessary to maintain it is a change in the length at which the muscles must remain and the power required may be no greater than before. To keep the muscles habitually at this changed length is obviously a function of the central nervous system and involves the conditioning of a new reflex which regards a new muscle length as normal.

The requirements for a good posture in an otherwise healthy body are adequate muscles and correctly conditioned reflexes. The muscular power required to maintain posture is so small that it is unusual for muscular weakness alone to be the cause of postural deficiency. In a large proportion of cases the error lies in the postural reflexes and it is to this that attention has chiefly to be directed. It is perhaps permissible to compare the state of affairs to that in a pianola. When a record of a given pattern is passed through the instrument a particular tune is played but it is subject to the conscious modulations of the player by means of the speed and volume controls. Any fault in the record will be reflected in the tune and can be remedied only by altering the record conditions in the body are much the same. Temporary modification of posture can be obtained by conscious control but any permanent change must be associated with an alteration in the postural reflexes. Increasing the size and power of the muscles alone will have no effect.

Ætiology

The causes which lead to the development of faulty postural reflexes, or to a change from good to faulty reflexes, are little understood. There must be many factors concerned, more than one of which are likely to be present in any case.

A great number of postural deformities commence in late childhood and adolescence, during periods of rapid growth. The bones and muscles are then increasing in length and the central nervous system is continually being called upon to modify its postural reflexes. This adjustment is likely to be interfered with by any upset in general well being. There are many ways in which this can be brought about, at the present time a common one is undernutrition. Toxæmia from some chronic infection is another factor which may play its part, and one which is itself greatly aggravated by undernutrition.

It is doubtful if heredity is concerned in the ætiology of those cases falling within the definition of postural deformities, but it is probably of importance in certain of the fixed deformities which cannot be corrected by voluntary muscular effort, for example, those "malignant" cases of pes cavus or of scoliosis which tend to recur or to progress in spite of every treatment.

It has been the custom of surgeons for many years to blame the immediate surroundings of the patient, such as vicious school furniture and types of clothing, for the onset of some deformities. Some have even gone so far as to suggest that "one sided" occupations, like violin playing and the use of a side saddle in horse riding, are sometimes responsible for scoliosis! No logical explanation of the mode of action of such mechanical factors has been brought forward and it is difficult to believe that they are of any great importance. A child who is determined to sit badly will do so at any desk—it would be far more rational to blame a boring lesson that fails to hold his attention.

A normal posture can only be assumed when the higher parts of the brain are intact, so it is reasonable to suppose that any disturbance in the normal functioning of the brain can interfere with the development of postural reflexes. It is obvious that posture is subject to conscious modification, and, by analogy, it might be expected to be influenced by unconscious cerebral processes. There is a growing tendency to explore the psychogenic factors underlying disease processes of many sorts. The investigation of this subject is fraught with the greatest difficulties, and there are many pitfalls in the way of the interpretation of any findings. Sometimes, however, it does seem possible to make a direct correlation between the psychopathological findings and the physical condition, and certain cases of postural deformity provide excellent examples.

Brinkart has said "to diagnose a scoliosis, look at the child's back, to find its cause, look at the mother's face." The general truth of this observation is apparent to everyone and, moreover, it is quite rational to expect that any psychological maladjustment will be reflected in the postural habits. The most extreme case of the association of an abnormal psychological state with an abnormal posture is seen in "neurasthenia" using the word in its narrow sense of a particular functional nervous disorder. It occurs in both adults and children, and the picture is very distinctive. The patient is flabby in both body and mind. Mentally he is tired, bodily he has given way to gravity and has sagging jaw and eyelids, tilted pelvis, and flat feet. The mental and

physical conditions go together and any attempt to change the physical condition, until such time as the psychological adjustment has been improved, usually leads to disappointment.

Other but less clearly defined groups are to be found amongst children and adolescents. In the "anxiety states" the general picture is of a hyper-sensitive, alarmed child, not infrequently subject to nightmares and often with a stammer. Physically he tends to have flat feet, knock knees, and round shoulders, a position of fear, but, in contrast to the "neurasthenic," his muscles are tense rather than slack. Again, the "obsessional" child may show queer habits of gait and posture, often asymmetrical which are impossible to explain except in association with the psychological condition.

To sum up, there are a number of factors concerned in the ætiology of postural deformities. The most important are undernutrition, rapid growth, and psychological maladjustment. Undernutrition alone may provide sufficient cause by undermining the general health, both physical and mental. In other cases it develops during a period of rapid growth in people who are emotionally disturbed, and consequently are unable to make satisfactory adjustments in their postural reflexes that are necessary to meet the needs of growth. In a further class, exemplified by the "neurasthenics," the psychological attitude is directly reflected in the posture. I do not maintain that nearly everybody with a postural deformity is a "neurotic." I suggest rather that, in far more cases than is usually suspected, there is some psychological maladjustment that interferes with the development of correct reflex postural habits. The maladjustment is often only temporary, and, when it has corrected itself, the postural habits also are readily corrected.

Pelvic Inclination

Deviation of the curves of the spine from what has come to be regarded as normal is of more than cosmetic importance. It reduces the mechanical efficiency of the back so that it is more readily fatigued and more liable to strain. It is therefore important to have accurate knowledge of the normal arrangement, and some method of mensuration more accurate than the usual one of judging by eye is desirable. Direct measurements have proved notoriously unsatisfactory because of the difference in the thickness of the fleshy and fatty coverings and of the actual lengths of the spinous processes. The ideal method of measurement would be to take radiograms of the standing patient with a tube at 6 ft and a plate large enough to cover the pelvis and most of the spine. A suitable X ray apparatus is in existence, but, as it is not available in this country even for research work, the method is at present of no value for routine use.

Since it is impracticable to measure the spinal curves directly, attention has been turned to an indirect method. The spine is attached to the pelvis at the lumbosacral junction, so that any movement of the pelvis will cause a corresponding movement of the fifth lumbar vertebra. The habitual posture of the pelvis therefore determines that of the fifth lumbar vertebra, which in turn must affect the posture of the whole lumbar spine. Hence measurement of the inclination of the pelvis should give a estimation of the curve of the lumbar spine.

The inclination of the pelvis has never been measured satisfactorily in the living subject. Reynolds and Lovett (1910) say they believe it to be impossible to measure its variations with sufficient accuracy.

to be of value, but they give no indication of the methods they have tried. Most estimations have been on the cadaver but several workers, notably Prochownik (1882) have attempted it on the living subject by rather elaborate means.

I have devised a simple method of measuring the pelvic inclination which I believe is of sufficient accuracy. Measurements of the inclination of a fixed object give readings accurate to 1° with different observers. Repeated measurements of the pelvis of the same people on different occasions gave a variation of $\pm$ or -2 . This wider variation is accounted for by a slight difference in posture on the different occasions and it is not present if the person stands still whilst several observations are made.

The instrument (Fig. 2) has been made for me by Messrs. Down Bros. Ltd. It consists essentially of a pair of external callipers with a vertical plate fixed at the hinged end in such a way that it is always in a plane at right angles to the plane of bisection of the callipers. The plate is graduated in degrees, and a plumb line suspended so that the inclination to the horizontal can be read directly from the scale.

The points taken for measurement are the upper border of the symphysis pubis in front and the level of the posterior superior spines behind. This posterior level was chosen rather than the fifth lumbar spine

blade adjusted to touch this point. The left blade is placed on the mark already made posteriorly. Finally the graduated plate is made parallel with the plumb line and therefore vertical and a reading is made.

Lovett (1931) quotes the figures for the pelvic inclination obtained by various investigators in the

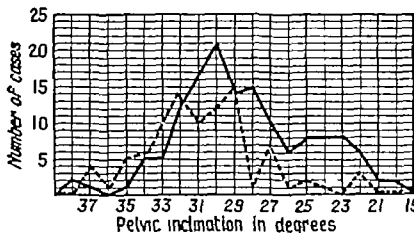


FIG. 3.—Pelvic inclination of adults. Males (interrupted line) average 31. Females (continuous line) average 28.

last century as ranging from 41 to 65 . He says that all the figures are adjusted to give the inclination of the true conjugate of the pelvis which he defines as the line joining the lumbosacral junction to the upper border of the symphysis. However, Ten Teachers Midwifery (1935) defines the true conjugate as the line joining the centre of the promontory of the sacrum to the nearest point on the surface of the symphysis. The planes in which these two lines lie differ by some 10° so it is difficult to use Lovett's figures as a basis for comparison. Prochownik (1882) has adjusted his figures to give the inclination of the plane of the pelvic inlet and thus differs from both the above planes.

The older workers were interested in the inclination of the pelvis from the point of view of the mechanics of parturition. Since this is not now the only interest, and since the inclination of the true conjugate can only be measured directly by radiography I suggest that this plane should no longer be used as the standard. Subsequent mention in this paper of the inclination of the pelvis will refer to the angle between the horizontal plane and the plane of the lines joining the posterior superior spines to the symphysis pubis.

The pelvic inclination has been measured in a consecutive series of normal adults. The women were mostly nurses and massage students aged 18 to 30 (average 21). The men were from a V.M.C.A. training class and medical students aged 17 to 30 (average 23). The figures are given in the Table and the frequency with which the various inclinations occurred is shown in graphic form in Fig. 3.

Table showing Pelvic Inclination

	Average.	Range
93 men	31	3–19
137 women	28	35–18

FIG. 2.—Pelvic inclinometer

because the latter is much broader and often difficult to palpate accurately. No mention of posture is made to the subject unless the one adopted is obviously forced. The posterior superior spines are palpated and a pencil mark made on the skin at this level in the midline. The blades of the callipers are held one in each hand with much the same sort of grip as a pencil is held when writing. The upper border of the symphysis is palpated with the middle finger of the right hand and the point of the right

It was necessary to discover to what extent the shape of the lumbar spine would correlate with the pelvic inclination. With this in view a note was made in every case of the appearance of the back as judged by eye and of the degree of lordosis so far as it could be measured. This was done by dropping a plumb line from the most prominent vertebra and measuring the distance in inches from the plumb line to the sacrum and the point of maximum lumbar convexity.

It was found that these measurements were almost useless as a guide to the shape of the spine. The appearance, however, was of much greater value and correlated well with the pelvic measurement.

The normal curves of the spine must vary a certain amount from individual to individual, and it is very difficult to define them. Moreover, if a person is leading an ordinary life and is free from symptoms, it is difficult to say that any small deviation from an arbitrary standard is abnormal. The standard here adopted is one in which the body is well "set" as judged by the eye, and in which a vertical line in the plane of the mastoid process passes through the middle of the shoulder and hip joints, towards the front of the knees, and well in front of the ankles (Fig 4). By this standard, 56 per cent of the men and 46 per cent of the women in this series were classed as having normal curves and normal posture. The pelvic inclination in the men ranged from 34° to 26°, with an average of 31°, and in the women from 33° to 23°, average 29°. Individuals classified as having a lumbar lordosis invariably had an increased pelvic inclination, and those with a flattened lumbar spine had a decreased inclination. A change in inclination also occurred in those who leant backwards or forwards at the hips and yet had normally curved spines, and in certain other abnormalities of posture. This will be discussed more fully under types of postural deformity.

It is usually said that the posture and spinal curves vary with the type of body build. With a view to studying this point, the type of each person examined was recorded. The classification used was normal, sthenic, asthenic, and dysplastic. The standard of normal was again an arbitrary one and really amounted to the mean between sthenic and asthenic. Individuals with a sthenic lower body and asthenic thorax, or vice versa, were described as dysplastic. These types have

been carefully correlated with the rest of the data. No particular type of posture or spinal curves could be found corresponding to the body types. The average angle of pelvic inclination of each type closely approximated to the general average.

The pelvic inclination is rather smaller in the early years of life than in the adult. This is as might be expected during development from the flexed intra-uterine position to an upright posture. An attempt

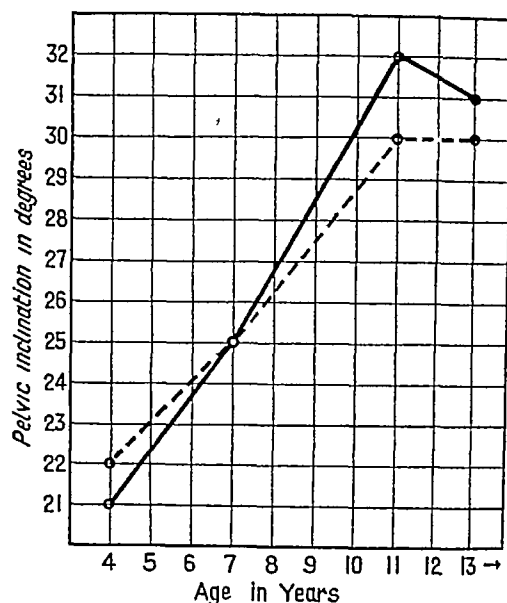


FIG 5.—Pelvic inclination of children. Males = continuous line. Females = interrupted line.

has been made to follow this change statistically, but difficulties were experienced in obtaining access to a sufficient number of children. The education committee of the London County Council kindly gave me permission to attend the routine medical examinations of children under their control. These examinations are made at approximately the ages of 4, 7, 11, and 13 years, and twenty-five children of each sex at each of these ages were measured. The results are given in Fig 5 and suggest that there is a steady increase in pelvic inclination up to the age of 11 when the adult level is reached.

Muscular Control

The pelvis is balanced on the femora, so that its angle of inclination (and consequently the curve of the lumbar spine) depends on the posture of the hip joints. The muscles controlling the hips are therefore responsible for determining the pelvic inclination. In the upright position the thighs are the fixed points from which these muscles act, so that contraction of the flexors (the iliopsoas and rectus femoris) will increase the inclination, and contraction of the extensors (the glutei and hamstrings) will decrease it.

Investigation of muscle action by means of their action currents has brought out two points concerning the glutei that are of importance. It is commonly stated—e.g., Quain's Anatomy (1923)—that the *gluteus maximus* is not used in ordinary walking movements to any great extent. This could not be confirmed. The muscle participated in producing full external rotation of the hip and in every movement involving extension, including tilting backwards the pelvis. The *glutei medius et minimus* are primarily abductors of the hip but they are also extensors and, by their central and posterior portions, they are external rotators.

The three glutei function in life as one unit and as part of the extensor group of muscles that maintain the upright position. Their combined action on the hip can produce extension, abduction, and external rotation, but the thigh or pelvis is moved according to which is the fixed point. Postural increase in the

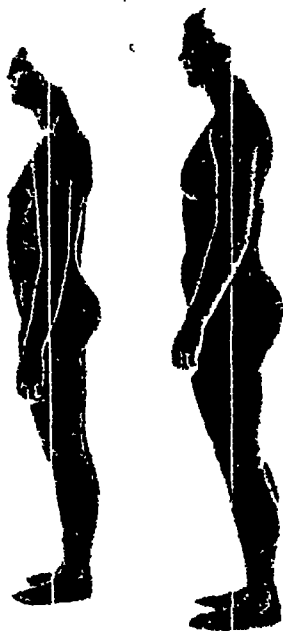


FIG 4.—Normal posture. A line has been drawn through the mastoid process parallel to a plumb line included in the original photograph.

lengths of these muscles will therefore result in forward tilting of the pelvis and internal rotation of the legs. The latter is of considerable importance in the aetiology of flat feet.

The action of the *rectus abdominis* is often misunderstood because it can be seen to contract synergically with the glutei when the lumbar spine is flattened. From this it is often argued that the rectus and not the glutei is tilting the pelvis backwards and consequently remedial workers pay great attention to it in cases of lordosis. However such an action is impossible because there is no fixed point above from which it can pull.

If the *rectus abdominis* could be made to contract alone, it would clearly approximate the sternum to the symphysis pubis and flex the lumbar spine. The part of the body actually moved would depend on which was the fixed point: either the pelvis would be tipped backwards or else the thorax bent forwards. When standing upright the thorax is the least fixed and must therefore be the part to move. If it were desired to fix the thorax and move the pelvis, the only muscles that could do so would be the *erector spinae*; but consider what must happen if the *rectus* and the *erector spinae* contract together. These muscles are bridging the gap between two bony boxes which are joined by a curved flexible rod. Their simultaneous contraction can have only one effect, to move the thorax bodily nearer to the pelvis and increase the lumbar curve (Fig. 6). The *rectus abdominis* can therefore have little effect on the inclination of the pelvis when standing erect. Its action (in addition to that of retaining the abdominal contents) is to flex the lumbar spine.

The *erector spinae* control extension of the spine. The range of movement is largest in the lumbar region where there is a large and powerful mass of muscle to raise the trunk from the flexed position. In the dorsal region the range of movement is very much smaller; the *erector spinae* is much less powerful but there are other muscles which assist it. The

dorsal curve is flattened appreciably with every inspiration, and for this the muscles of respiration—the diaphragm, intercostals, &c.—are largely responsible. These muscles must therefore coöperate

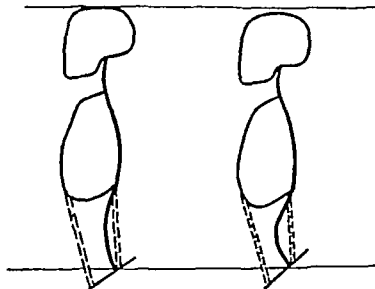


FIG. 6.—Simultaneous contraction of the *rectus abdominis* and the *erector spinae* must increase the pelvic inclination.

in maintaining normal posture, and also in recovering from a slack position in which there is a slight increase in the dorsal curve to a good posture.

The weakest part of the extensor mechanism of the spine is in the upper lumbar and lower dorsal regions. The mass of the *erector spinae* is getting smaller and the change of curve from concave to convex is taking place, making it mechanically a vulnerable spot. Loss of tone in the extensors will allow the whole weight of the upper part of the body to come on to the spine and produce one of the commonest deformities, a dorsolumbar kyphosis (Fig. 10). In the early stages the deformity can be straightened by the action of the *erector spinae*. Later on however it seems that the ligaments become contracted and sometimes the vertebrae become wedge-shaped so that active correction is no longer possible.

To summarise—the inclination of the pelvis is controlled almost entirely by the muscles surrounding the hip joints. The abdominal and spinal muscles have little direct effect on the pelvis; their action is to keep the body upright whatever the pelvic inclination by varying the curves of the spine.

TYPES OF DEFORMITY

It is essential for the maintenance of the upright position whatever abnormality of posture may be present that the centre of gravity of the whole body should fall somewhere within the area occupied by the feet. This limits considerably the possibilities of postural variation and analysis shows that only two components contribute to make up the majority of cases. Firstly there is nearly always an alteration in the pelvic inclination which may be increased or decreased. Secondly there may in addition be a dorsolumbar kyphosis. These two variables combine to produce four distinct groups which are adequate to classify the majority of cases. (In the following, normal spine means one which has no

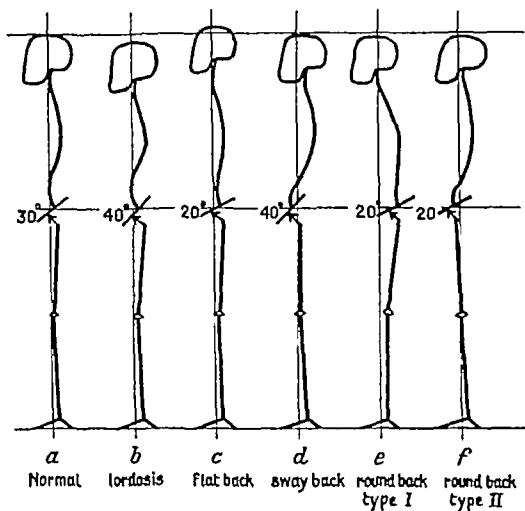


FIG. 7.—Types of postural deformity

intrinsic error and whose curves become normal when the pelvic inclination is corrected)

Forward tilt of pelvis plus	{ normal spine dorsolumbar kyphosis
Backward tilt of pelvis plus	{ normal spine dorsolumbar kyphosis

lumbar lordosis
sway back
flat back
round back

In the ensuing account of the types of postural deformity the pelvis is taken as the starting point for description, not because it is necessarily the causal factor, but because it is the base on which the column of the spine is supported. The problem then becomes largely the mechanical one of explaining how the centre of gravity is adjusted (Fig 7). A theoretical explanation of the production of the deformities is given for the sake of convenience, but it is not suggested that it is the actual manner in which they arise during life. The process is one of gradual "slumping," rather than of separated movements.

LUMBAR LORDOSIS

The mechanism of the production of lordosis can be visualised as follows. First the pelvis is allowed to tilt forwards, and with it the whole trunk. Then the centre of gravity is restored by bending backwards in the lumbar region and increasing the concavity (Figs 7*b* and 8). The mastoid line bears much the same relation to the large joints in the corrected and uncorrected positions. The spine is pretty well balanced so the erector spinae have little work to do and can share in a general slump of the anti-gravity muscles, thus permitting a slight increase in the dorsal curve.

The condition is often referred to as kypho lordosis, but the increase in the dorsal curve is slight and unimportant. The dorsolumbar curves in the corrected and uncorrected positions were recorded in a number of cases with malleable metal strips. The strips were then outlined on papers which could be superimposed to show the amount of change.

The change is surprisingly small in the dorsal region, and the kyphotic appearance of the dorsal spine in such cases is partly due to the exaggerated curves above and below. Tracings of photographic reductions are shown in Fig 9.

Internally rotated legs and valgus feet are very commonly present in cases of lordosis, as in all other deformities in which there is an

increased pelvic inclination. The feet can only be corrected after the general posture and the rotation of the femora has been altered (Wiles 1934).

The pelvic inclination has been measured in 24 female patients undergoing treatment for lordosis. The

average angle was 39° , with a range of 34° to 41° (average for normal women 28°).

The clinical picture in a typical case is one of a forward tilted pelvis, increased lumbar and dorsal curves, shoulders drooping and head poked forwards; internally rotated legs and valgus feet. The dominating feature, however, is the pelvis, the rest of the deformities are secondary to it. This has often been demonstrated when examining untreated cases. The patient has been shown how to use the glutei to restore the pelvic inclination to normal and the posture of the trunk has at once returned almost to normal.

Treatment, so far as it is local at all, should be directed chiefly to the glutei. To concentrate on the abdominals, as some workers tend to, can achieve little by itself because these muscles play only a secondary part in this deformity.

SWAY BACK

This name originated in America for a postural type which seems to be very common there. Analysis along the lines already indicated shows it to consist of a forward tilted pelvis in association with a dorsolumbar kyphosis. The degree of kyphosis is often quite small, really no more than a flattening of the upper part of the lumbar concavity. However, even this amount is sufficient to prevent the spine compensating to the tilted pelvis by a general increase in the curve of the lumbar region, as occurs in the previous type. Instead the centre of gravity is restored to a stable position by bending the spine sharply backwards in the lower lumbar region (Figs 7*d* and 10). In this position,

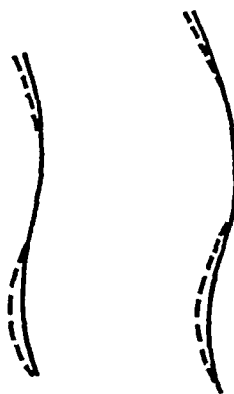


FIG 9.—Showing the small change in the curve of the dorsal spine in two cases of lumbar lordosis (see text).

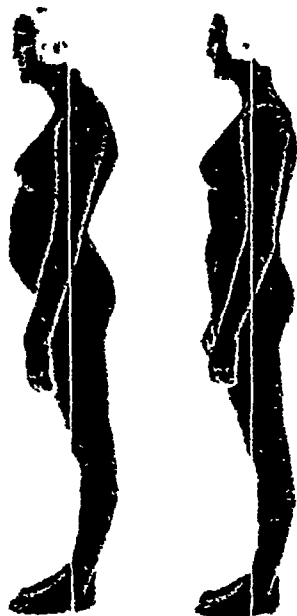


FIG 8.—Left lordosis. Right corrected by decreasing the pelvic inclination.

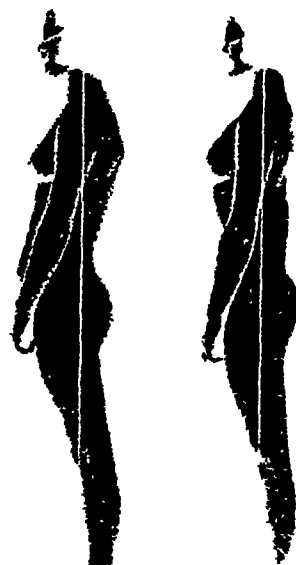


FIG 10.—Left sway back. Right decreasing the pelvic inclination improves the posture but cannot remove the dorsolumbar kyphosis.

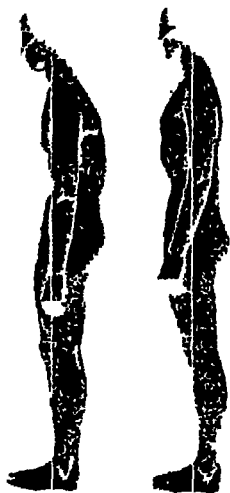


FIG 11.—Left, round back, Type 1. Right: the pelvic inclination is increased but the back is still abnormal.

the legs are inclined slightly forwards at the ankles so that the pelvis projects forwards. The mastoid line passes well behind the great trochanters and a plumb line from the most prominent part of the dorsal convexity falls behind the sacrum. Internally rotated legs and valgus feet are commonly present, and not infrequently there is a total scoliosis as well.

In the cases examined, the average inclination of the pelvis was 37° the range being 35–41°.

The dorso-lumbar region of the spine is only occasionally sufficiently mobile to allow active correction by the erector spinae. As a rule there is such limitation of movement that the deformity is not even corrected when a wedge is placed under the upper lumbar spine and the patient lies limply across it. The limitation of movement is sometimes due to structural changes in the vertebrae which can then be shown by X rays to be wedge shaped.

From the point of view of treatment away back differs from simple lordosis in that correction of the pelvic angle does not enable the spinal curves to be restored to normal. Treatment has therefore to be directed at first to increasing the mobility of the spine—one of the most difficult problems of postural correction.

FLAT BACK

Flat back is just as much a postural deformity as any of the other conditions discussed. The pelvis is abnormally flat and the spine is flattened in compensation. Such cases however are seldom if ever sent to orthopaedic departments on account of their posture and adolescent patients are rarely seen in remedial clinics undergoing treatment for flat back. People with flat back come under orthopaedic observation later in life complaining of back ache, sacro-lumbar strain or other troubles of a mechanical nature. By this time the spine is too stiff for any change of posture to be possible and only symptomatic treatment can be given. A great many of these complaints could be prevented if only parents and school medical officers could be brought to realise that a lovely straight back is not necessarily ideal and could be persuaded to send such cases for treatment during childhood.

ROUND BACK

This name has been adopted for a rather less clearly defined group of cases in which a decreased pelvic inclination is associated with a dorsolumbar

kyphosis. The centre of gravity is stabilised by mechanisms of two different types. In type 1 which gives the name to the group the trunk is bent forwards in the lower lumbar region obliterating what is left of the lumbar curve. The legs are inclined slightly backwards at the ankles so that the pelvis is displaced relatively backwards and the great trochanter is behind the mastoid line (Figs 7e and 11).

The mechanism in type 2 is very similar to that in sway back. The legs are inclined forwards and the trunk backwards causing a lower lumbar angulation, the great trochanter is in front of the mastoid line (Figs 7f and 12).

The treatment of this group presents just the same problems as sway back—the difficulty of restoring the upper part of the lumbar concavity.

DORSAL KYPHOSIS

There is a group of cases of kyphosis affecting principally the dorsal spine that was at one time regarded as being postural in origin. Recently however such cases have been shown to be associated almost invariably with disease of the intervertebral disks and the epiphyses of the bodies of the vertebrae. These cases therefore do not fall under the heading of postural deformities.

Treatment

Before embarking on the treatment of postural deformity inquiry should always be made into its cause. In cases in which there is no mechanical cause the factors discussed under aetiology have to be considered. Especially is the question of under-nutrition worth attention to give remedial exercises to an undernourished patient is only adding to his troubles. When no other cause is forthcoming investigation should be made into possible psychological factors. This involves inquiry into the psychological make up of the patient and his home conditions. In any case of doubt or when the problem of emotional readjustment is beyond a resolution it is advisable to obtain the assistance of a medical psychologist. It is of little use to expect a patient to co-operate in remedial work when he is



FIG 12.—Left, round back, Type 2. Right: increasing the pelvic inclination improves the posture but cannot remove the dorsolumbar kyphosis.

trying to grapple with an emotional problem which is, to him, of much greater importance

The treatment of postural deformities falls into three stages. Firstly, restoring sufficient mobility to enable correction to be made, secondly, acquiring voluntary control over the movements that produce correction, and thirdly, the establishment of new reflexes that will maintain permanently the correct posture. Any good system of remedial work deals with all three stages simultaneously, they are only separated here for discussion.

Mobility is limited to an extent sufficient to prevent correction of the deformity in only a proportion of cases. This is of importance particularly in the dorsolumbar kyphosis of sway back, and the limitation of extension of the hips in some cases in which the pelvic inclination is increased. There are three causes of the loss of mobility, one or more of which may be present in any case.

- (1) Structural changes in the shape of the bone,
- (2) Contracted ligaments, and
- (3) Shortened muscles

A *structural change* in the shape of the bones occurs in some cases of dorsolumbar kyphosis. It is impossible to restore the shape of the bones by any remedial measures. Indeed it is doubtful if any of the most drastic corrective machinery used by orthopaedic surgeons has any effect on it. The object of remedial work in structural cases is to develop such compensatory curves as will give the greatest mechanical and æsthetic advantage.

Contracted ligaments and joint capsules may be found preventing correction of dorsolumbar kyphosis or limiting extension of the hips in cases with increased pelvic inclination. The stretching of contracted ligaments, as of any other fibrous tissue, is a matter of difficulty. Forced passive movements, either with or without an anæsthetic, result in tearing the ligaments and do more harm than good. The most effective method of stretching them at all rapidly is prolonged traction. Head suspension is therefore very valuable when dealing with contractions affecting the spine and, if carefully supervised, is well tolerated by patients. Active movements carried to their extreme range and repeated frequently may be of some assistance in stretching ligaments, but care must be taken to see that the movements are not too violent and to ensure that they are localised to the affected region.

"*Shortened muscles*" probably play a part in hindering correction of most deformities that are at all severe. The process of increasing the length of muscles is often referred to as muscle stretching. This is hardly the right word to use because, so far as is known, muscle fibres cannot be stretched—they have to be made to relax more fully. This is not merely an academic point, but a practical one which directly affects treatment. The normal physiological response of a muscle to stretching is contraction, and the harder it is stretched the more strongly it contracts. Therefore, passively stretching a muscle calls into action this "stretch reflex" and makes the muscle contract more. The passive stretching of muscles with the idea of lengthening them is a procedure that should be abandoned, it can do no good, and, if carried to an extreme, it will do harm.

The lengthening of a muscle can be achieved by getting it to relax more fully. A muscle relaxes reflexly when its antagonist contracts, but, when a "free" movement is made—that is, one without any resistance to it—the muscle does not relax completely, it maintains enough tone throughout

the movement in order to keep the joint under control, and it will go on contracting even when the extreme of movement is reached. However, when a movement is made against resistance, the muscle is enabled to relax more fully because control of the joint is obtained by means of the pressure between the resistance and the contracting muscle. Hence, to stretch a muscle, its antagonist must be made to contract against resistance and continue to work against the resistance when the extreme of movement has been reached. Thus, if the flexors of

the hip are contracted, the appropriate exercise is to extend one leg backwards against gravity whilst keeping the trunk vertical, in the manner of the "battement derrière" of the Classical Ballet (Fig 13). Backward bending from the hips is useless because the movement is made by gravity with the flexors contracting strongly to control it.

Voluntary control over the movements that correct a postural deformity is easily taught when adequate mobility is present. In those cases in which mobility is limited at the commencement of treatment, control is learnt automatically whilst mobility is acquired.

In cases where the pelvic inclination is increased, the glutei are the correct muscles to restore it to normal. The glutei are the principal extensors of the hips, and tilting backwards the pelvis is exactly the same movement as extending the hips. Patients should not be told to "draw the stomach in" or they will use the abdominals. They should be given some such order as to "tuck their tails under them," and then be watched to see that they really are using the glutei. Some patients tend to use the hamstrings for tilting the pelvis, this can be prevented by making the movement in the kneeling position so as to reduce the power of the hamstrings.

The establishment of *new postural reflexes* is the final aim of all remedial treatment. It is just here that so many systems, including that officially recognised in this country, show their greatest weakness. They are mainly concerned with strengthening muscles and increasing mobility, and make but little effort to teach the patient how to hold the new posture. Remedial work requires "postural fixation" not "postural change," so, when it is possible to make a voluntary correction, exercises that move the parts of the body principally concerned can do no good. Exercises must be directed towards keeping the



FIG 13 — The correct movement to encourage extension of the hip and spine

parts as still as possible whilst the rest of the body is moved. Thus the patient is taught to keep a good posture during every variety of movement.

It would be out of place to attempt to describe here any particular remedial system that will fill the criteria set out. It requires but little ingenuity to invent one once the principles are understood. I am concerned mainly to emphasise that it is not movement, but absence of movement of any given part that is essential for the establishment of a postural reflex. Success or failure of treatment depends on the extent to which the co-operation of the patient is obtained. During the remedial class it is only possible to teach the patient how to get into the new posture and how to hold it under a variety of conditions. The establishment of an unconscious reflex that will hold the new posture permanently is only possible if the patient continues to try after the class is over and it can never be done if as soon as he is out of the room he just drops back into the old posture. For treatment to be successful the patient really must want to be cured and make up his mind to succeed. The personality of the teacher and his ability to win the patient's confidence and keep his interest is of just as great importance as a knowledge of remedial technique.

Summary

1 The regulation of posture is a function of the central nervous system which determines the length at which the muscles are habitually held. The strength of the muscles is of less importance.

2 The importance of rapid growth, undernutrition and psychological factors in the aetiology of postural deformities is emphasised.

3 A new instrument is described for measuring the pelvic inclination. This angle in normal adult males averages 31° and in females 28°. In children it is somewhat less but it increases up to 11 years of age when the adult level is reached.

4 The pelvic inclination is regulated by the muscles surrounding the hip joint and not by the trunk muscles.

5 Deformities are classified on the basis of their two principal components—variation in pelvic inclination and the presence or absence of a dorsolumbar kyphosis—into four types: (1) lumbar lordosis (2) sway back; (3) flat back; (4) round back.

6 Final correction of a deformity can only be made by establishing new postural reflexes. This can never be done by movement but only by absence of movement; therefore exercises must be designed to keep still the parts of the body concerned.

It is a pleasure to thank Prof. Samson Wright for permission to work in the department of physiology at the Middlesex Hospital medical school, and also the honorary staff of the Royal National Orthopaedic Hospital for allowing me to examine a number of their patients. I also wish to express my indebtedness to Sir Frederick Menzies and the London County Council for permission to attend the medical examinations of elementary school children and to Mr Paul S. Newby, director of physical training at the Central YMCA, and Miss E. M. Prosser, sister-in-charge of the massage department of the Middlesex Hospital for their kindness in procuring me normal subjects for measurements of pelvic inclination and to the many subjects themselves, whose great patience has made this work possible.

REFERENCES

- Delpach J. (1828) De l'Orthomorphie par rapport à l'érection humaine. Paris.
Lorett H. W. (1931) Lateral Curvature of the Spine. Philadelphia, P.

(Continued at foot of next column)

PRURITUS ANI*

By JOHN W. RIDDOCH, M.C., M.B.

F.R.C.S. Edin.

HOY SURGEON TO THE MIDLAND HOSPITAL, BIRMINGHAM

THE sensation of itching like pain is a protective function of the body. Pain causes various reflex acts while itching leads to scratching or rubbing to remove such things as insects which have a harmful effect on the organism. Pain is transmitted by the autonomic as well as the cerebro-spinal nervous system but itching is carried by the somatic nerves alone as only these supply the parts where itching is biologically useful. If however scratching is unlikely to do good itching must be regarded as pathological and worthy of the name pruritus. It is apt to occur more frequently about the various body orifices than elsewhere; no doubt to get rid of excess discharge and at two of these the anus and the vulva it not infrequently becomes pathological and so severe as to acquire the status of a syndrome or even an actual disease.

Anal irritation of minor degree occurs in a considerable proportion of cases of internal haemorrhoids and other local abnormalities but the term pruritus ani denotes a condition where irritation is relatively severe. In it the symptoms are often worse at night soon after retirement to bed and they may seriously interfere with sleep. Sometimes there are intermissions when the irritation is in comparative abeyance and the patient may think he has got over the worst of his trouble only to be sadly disillusioned by the next attack. Carlyle could not have known of this disease when he said that the greatest pleasure in life is to scratch the part that itches for the patient gets little relief from his efforts. The sensation is described in such terms as smarting, tickling, burning, pricking and it is situated in the lower end of the anal canal, the anal verge and a variable extent of the perianal region. The affected skin may be surprisingly normal in appearance but it is usually thickened and somewhat sodden—a change described as lichenification—and often shows superficial cracks radiating from the anus. Superimposed on this scratching and formidable remedies may have grafted a traumatic dermatitis and though septic infection is thus introduced it is curious to note that inguinal adenitis rarely if ever occurs (O'Donovan 1930).

Aetiology

There must be few diseases that have been ascribed to so many causes as pruritus ani. Lord Horder (1935) has said it is the merest tyro who supposes that local pruritus (is due) to local causes. I am quite sure that pruritus ani may be of entirely general origin. On the other hand Lockhart Mummery (1915, 1934) has long believed that a local cause is present in all cases but that in some our knowledge is insufficient to recognise it. It is agreed that anal pruritus may be caused by local

A paper read before the Midland Medical Society on Feb. 3rd 1937.

(Continued from previous column)

- Prochownick, L. (1882) *Arch. Gynecol.* 19, 1.
Quain's Elements of Anatomy (1923) London vol. iv. part 1.
Hjelm J. C. and Lorett H. W. (1910) *J. Amer. med. Ass.* 5, 1032.
Ten Teachers Midwifery (1935) London p. 20.
Wiles I. (1931) *Lancet* 2, 1089.

conditions that give rise to a discharge, such as fissure, fistula and infected anal crypts, and proctitis, colitis, and ulcerative diseases of the bowel. It is likely that threadworms produce itching in this way. Internal hæmorrhoids and polypi may induce a seepage of mucus by excess of secretion or by allowing it to escape by prolapsing into the sphincters and preventing their closure. Scarborough (1933) believes that all cases arise in such a manner and can be cured by removal of the cause but his claim is unique.

There is no doubt in the minds of a colleague and myself that mucus can cause anal irritation as we have produced it on ourselves by its application, but it is probable that some sensitivity must be present as well, for it is not uncommon in some rectal conditions to see the perianal skin moist with mucus or other discharge without causing symptoms. Dirt, excessive local sweating, and pediculi may cause irritation but can easily be recognised. Bacterial and fungus infections have been put forward as causes but have not found acceptance. Where a careful search has failed to reveal any local abnormality distant lesions have been blamed, especially gynaecological abnormalities, conditions of urinary obstruction such as stricture, prostatism, and stone in the bladder, and cholecystitis and diseases of the liver. In the absence of these, focal sepsis, gout, rheumatism, and diabetes are commonly mentioned, though with what justification I am unable to say. The fact that attacks may be brought on by tea, coffee, and alcohol, and in some people by cheese, fish, strawberries, &c., has added allergy to the list of causes, and lastly, and perhaps inevitably, the disease is often regarded as a neurosis.

In order to escape from this diagnostic maze some classification is necessary and I propose to distinguish between those cases due to a discharge and those which are not. I regard cases associated with a discharge, and cured by its removal, as cases of exogenous dermatitis. In them the rash and irritation tend to pass backward in the natal cleft and forward on to the scrotum owing to the spread of the offending secretion in the directions of least resistance, and though in some of these cases the irritation may be severe, in the majority it is comparatively mild. True or idiopathic pruritus ani is however a separate disease, it may occur in a severe form with little, if any, alteration in the naked eye appearance of the skin, when it is coincident with an exogenous dermatitis it persists after the latter has been cured, it has a pathology of its own which is not, as is commonly supposed, the result of scratching, it may have superimposed on it a traumatic dermatitis due to scratching or irritant applications, but when this has cleared up after suitable treatment the pruritus remains, and it occurs in the complete absence of abnormalities in the anorectal region as judged by recognised standards and also in the absence of any general disturbance of health.

The sensation of irritation arises in the epidermis for, as pointed out by O'Donovan (1936), irritation ceases if ulceration occurs. It is due to minor but more or less rapid changes in tension (Bunch 1912), such as are caused by the burrowing of the *Icarus scabiei* or when tight garments are suddenly discarded. It is a feature of whealing and Sir Thomas Lewis (1927) mentioned itching when a wheal was caused by freezing the skin and no irritant was introduced from outside. It occurs in many skin diseases and in the oedema of the epidermis is commonly found, and it is reasonable to assume that

where the circulatory balance is upset, as it is in oedema, abnormal variations in tension are apt to occur and irritation is likely to arise.

In this paper I hope to show that idiopathic pruritus ani is caused by oedema of the perianal skin following on stasis in the external hæmorrhoidal veins, in other words, it is due to external piles.

Histology

As regards the microscopic appearances of pruritus ani Crawford (Haskell and Smith 1936) regarded them as essentially those of a low grade inflammatory process with proliferative changes. He found much thickening of the epidermis, dilatation of the superficial blood vessels and lymphatics, extensive infiltration of white cells, usually small lymphocytes, and fibrosis in the deeper layers of the cutis with oedema superficially. Montgomery (Rankin, Bagen, and Bue 1932), reporting on 5 cases, gave similar findings but believed that the changes resembled those of neurodermatitis and urticaria rather than inflammation. Further, it is important to note that in comparing cases of normal naked eye appearance with those where frank change was present he found the microscopic appearances differed in degree only and not in kind.

With the help of Dr Whitelaw and Dr Felix Smith I have examined sections from 6 cases, 5 of these presented various degrees of hyperkeratosis, but one showed no such alteration. In all there were changes similar to those described by Crawford and Montgomery. The epidermis was thickened, in some parts to twice its normal depth, and showed various degrees of acanthosis. Oedema was evidenced by swelling of the prickle cells and poor staining of their nuclei, and by the fact that the intercellular channels were more evident than in normal skin. Some thickening of the horny layer was usually present and in one case this was very marked. In the cutis there was dilatation of the blood vessels, especially the veins, and obvious oedema shown by separation of the connective tissue fibres and poor nuclear affinity for stain. The lymphatic vessels were also dilated. There was usually some lymphocytic infiltration of the papillae and the subpapillary layer, most marked round the vessels, but this feature was very variable, being absent in some parts of the sections (see Figure). An occasional eosinophil was seen in one section only.

It might be said that the lymphocytic infiltration suggests the presence of an irritant factor, but it is not a very pronounced feature except in one case and is hardly noticeable in some areas of the sections. Also in three normal specimens of perianal skin examined a certain number of lymphocytes were seen. Their presence in any number is not a characteristic of the disease and the essential change is one of oedema. Such oedema, as elsewhere in the body, can be produced by local venous stasis. It is, I think reasonable to assume that in the earliest stage of the pathological change pruritus has not manifested itself but the threshold to irritation is lowered, the skin is in a prepruritic state.

Effect of Venous Stasis

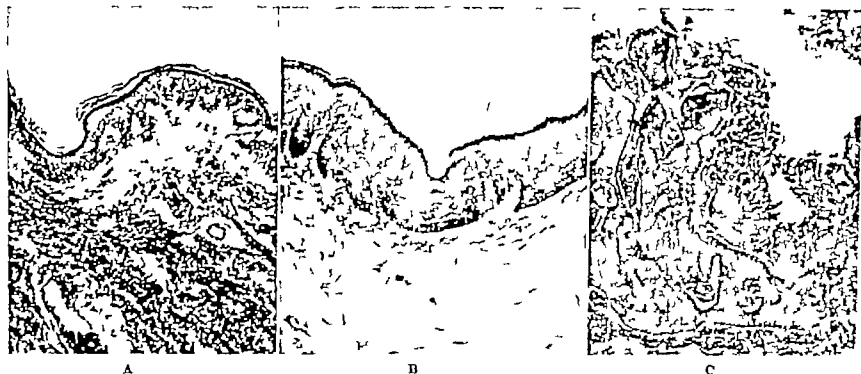
Let us now see how the theory of venous stasis agrees with the clinical manifestations and the therapeutics of the disease. A dramatic feature in the symptomatology is the fact that a patient who is free of symptoms during the day may be attacked by intolerable itching soon after getting into bed. He gets up and applies his favourite powder or ointment and relief sooner or later follows.

He goes to bed again and again the itching starts. He may find that the only way he can obtain sleep is to spend the rest of the night in a chair. The usual explanation that all itching is worse at night because one is warmer in bed and the mind is not occupied is hardly adequate. In the erect position the pressure of the valveless portal system is conveyed to the anal veins and when the patient lies down this pressure ceases and there is a sudden drop in tension in the peri-anal veins which is transmitted to the skin of the area. This would account for the great exacerbation that occurs at night and the same train of events is seen in varicose eczema of the legs.

Neurosis is merely of interest because the neurotic complains more bitterly of his symptoms than the normal person and if he has no disense to show to the uninitiated the poor fellow gets little sympathy.

Clinical Findings

The skin in the lower end of the anal canal and its vicinity is normally very thin and thrown into folds only a millimetre or two in width. In cases of pruritus ani the folds are much wider and the skin is felt to be thicker than normal when picked up between the finger and thumb owing to oedema even when no other change is present. When an



A. Normal perianal skin, note density of staining. ($\times 80$).

B. Pruritus ani, showing pallor of dermis and epidermis due to oedema. ($\times 80$).

C. Severe pruritus ani. The papillae are flattened out and there is a polypoid formation with great increase in thickness of the keratin layer and epidermis. ($\times 20$).

As regards the part played by gynaecological conditions inflammatory affections will cause general congestion of the pelvis and pelvic tumours may interfere with the venous return in both the superior haemorrhoidal and internal iliac veins and so cause anal congestion and stasis. A similar result will be brought about by the increased intra abdominal tension involved in the straining of urinary obstruction and affections of the liver by congestion or by mechanical means will react unfavourably on all the radicles of the portal system including the anal veins.

The effect of certain foods in sensitised individuals is explained by the fact that the ingestion of any substance that acts on the skin vessels will lead to changes of tension in that structure and though these changes may not be sufficient to cause any sensation in normal areas they may produce itching in a pruritic zone such as has been adumbrated. Allergy is thus accounted for. Slight rises in temperature produced by focal sepsis would act in a similar manner and the effect of alcohol is also explained in this way. The conception of a pruritic state also helps us with regard to the action of tea and coffee in starting attacks as caffeine facilitates the reception of sensory impulses (Cushny 1924).

I will not attempt to explain the supposed importance of gout rheumatism and diabetes; as previously stated they are often mentioned, but their relationship to pruritus ani is open to doubt and Lockhart Mummery (1915) has said he has never seen a bad case due to diabetes.

anoscope is inserted and slowly withdrawn past the mucocutaneous junction the skin below this line forms large bulges through which the bluish colour of the enlarged underlying veins is often apparent.

Treatment

Turning now to the effects of treatment Morley (1916) noted that pruritus ani sometimes cleared up after the injection treatment of quite small and symptomless internal piles. I have confirmed this on many occasions and would go further and say that benefit may be obtained by similar injections in the complete absence of any sign of internal haemorrhoids. This treatment acts by destroying the veins of the internal haemorrhoidal plexus and relieving back pressure on the external haemorrhoidal veins. It is not surprising however that the results of such treatment vary as the anastomosis between the two plexuses is not constant and the external plexus has connexions with the systemic veins.

Most operations are based on that of Sir Charles Ball (1905) which was devised to cut all the sensory nerves to the affected part. An essential part of the procedure is to undermine the skin of the anal canal to above the mucocutaneous line. Lockhart Mummery (1934) speaks well of this operation and states that though sensation returns in 4-6 weeks the pruritus is cured in most cases. It is stated that the skin operated on must be rendered completely anaesthetic. In six recent cases I have made a curved incision on each side of the anus and undercut the skin of the anal canal to just above the mucocutaneous line.

taking special care to destroy the veins, extensive undermining was avoided as far as possible and sensation was not completely lost. In five cases the pruritus disappeared and the skin became normal in appearance in a short time. In one case the pruritus reappeared after only 14 days, but it yielded to subcutaneous sclerosing injections and I regard this failure as due to faulty technique. From these results it would appear that complete section of the nerves is not necessary for cure, as far as one can judge at this stage, and here I would point out that it is impossible to carry out Ball's operation without destroying many if not all of the underlying veins.

Sir Frederick Wallis (1911) believed pruritus ani was due to some lesion at the mucocutaneous junction and he excised this along with the skin of the lower part of the anal canal. He claimed good results from this operation but again it is impossible to carry out the procedure without excising the neighbouring veins.

The subcutaneous injection of alcohol, dilute hydrochloric acid, and other substances was introduced as a substitute for operation to destroy nerves but the beneficial effects claimed can be explained in a similar manner. Solutions of anaesthetics in oil will stop the itching temporarily and allow a scratch dermatitis to subside, but they also will tend to strangle the veins by causing fibrosis.

As far as external applications are concerned they may be very important in the treatment of patients who have become sensitised to some superadded infective skin condition, and in these cases the co-operation of a skin specialist is often necessary, but in the treatment of the true idiopathic form the value of such remedies is belied by the very numbers that have been recommended. Radioactive mud, colon lavage, vaccines, ionisation, artificial and natural sunlight, &c., may, I think, be placed in the same category and their lack of value in treatment is easily understood in the light of the theory presented.

The claims put forward on behalf of Röntgen rays are usually moderate, but they appear to have some curative value and the explanation of this may be a destructive effect on the blood-vessels.

Conclusion

In conclusion, I believe that the severest form of pruritus ani and the occasional itching found in association with internal piles are merely different degrees of the same condition and that the underlying cause is oedema of the skin due to venous stasis. If I have not convinced you I can at least say that I have found this view to be a useful working hypothesis.

I wish to express my indebtedness to Dr W Whitelaw for his interest in the pathological side of the work and for preparing the photomicrographs.

REFERENCES

- Ball C (1905) *Brit. med. J.* 1 113
 Bunch J L (1912) *Practitioner* 89 357
 Crawford quoted by Haskell B, and Smith C D (1936) *J. Amer. med. Ass.* 106 1248
 Cushny A R (1924) *Pharmacology and Therapeutics* London p. 289
 Horder T (1935) *Lancet* 2, 287
 Lewis T (1927) *The Blood Vessels of the Human Skin and their Responses* London p. 53
 Lockhart Mummery, J.P. (1915) *Brit. med. J.* 2 291
 — (1931) *Diseases of the Rectum and Colon* London p. 215
 Morley A S (1916) *Lancet* 1 617
 O'Donovan W J (1936) *Practitioner* 136 148
 Montgomerie quoted by Rankin F W, Bergen J A and Baile L A (1932) *The Colon Rectum and Anus* London p. 609
 Scarborough R A (1933) *Ann. Surg.* 98 1039
 Wallis F (1911) *Practitioner* 87, 417

COMPARATIVE STUDY OF TUBERCULIN REACTIONS AND RADIOLOGICAL FINDINGS

By O SCHEEL, M.D.

PHYSICIAN TO ULLEVAAL HOSPITAL OSLO NORWAY

THERE is still no agreement as to where we are to fix the limit dividing positive from negative tuberculin reactions and as to which technique should be used, in particular whether Pirquet or Mantoux. During recent years in Norway we have regarded the Pirquet reaction, by the scarification method, as positive when induration measures 2 mm. or more after 48-72 hours, the Mantoux reaction is considered positive when induration measures 10 mm. or more after 48-72 hours. In France also the Pirquet technique is employed as a rule. In Sweden, Denmark, and England, on the whole, the Mantoux test is preferred and most workers fix the limit between positive and negative reactions lower than we do. Thus D'Arcy Hart fixes the minimum for a positive Mantoux reaction, after 48-72 hours, at "an area of erythema or erythematous infiltration" whose greatest diameter is 5 mm., he uses up to 10 mg., and on occasion 100 mg., of tuberculin. Arborelius considers a second Mantoux test with 1 mg. tuberculin as positive when there appears after 48 hours a definitely palpable induration and an area of erythema measuring at least 5 mm. by 5 mm. Thus both these observers fix the minimum for positive reaction lower than we do and think our method too insensitive, with the result that we obtain too few positive reactions among healthy subjects—viz., approximately 50 per cent at twenty years of age, while Arborelius obtains 85 per cent and D'Arcy Hart, from twenty one years of age, 95 per cent.

Now it is generally agreed that on the whole we can distinguish between pronounced tuberculin positive individuals and completely tuberculin negative individuals, which corresponds to infected and uninfected individuals. But the dividing line between these two groups is difficult to determine, for two reasons: on the one hand there are the false reactions which are due to non specific substances in the tuberculin, especially when more than 1 mg. of tuberculin is injected, on the other hand, the reaction may fail because of insufficient dose, faulty technique, or for other reasons. I have disregarded in the following the anergy which is seen, for example, in certain diseases and among the aged, for it has no interest in connexion with this material which consist of young healthy subjects.

In order to fix the limit between positive and negative reactions all observers argue from certain characters of the definite positive and definite negative reactions—viz., the size of the reaction, its mode of development in the course of the first few days, and the result of repeated tests with the same or increasing doses. But in this way evidence is sought in that which is to be proved, this is the case, for example, if we regard the Mantoux test as the reliable one and compare the various Pirquet responses with that of the Mantoux test. This mode of reasoning involves a logical *circulus vitiosus* in which that which is to be proved is used as argument in the chain of reasoning: both argument and conclusion are links in the same chain, the tuberculin reaction itself.

In order to break this vicious circle it is therefore necessary to control the tuberculin reactions by facts obtained from an independent source of evidence.

I may first reiterate the fact that with our Pirquet technique we always find a higher tuberculous morbidity among the Pirquet-negative than among the Pirquet-positive when both groups are exposed to infection. This corresponds to the known experimental finding that an initial infection with tubercle bacilli in animals has a more serious outcome than a later superinfection with small doses of tubercle bacilli. With our Pirquet technique therefore we distinguish on the whole two different immunological groups but this control is not sufficient to draw any exact line between infected and uninfected

THE INQUIRY

In an attempt to determine with more certainty this limit between positive and negative I have compared the tuberculin reactions with the simultaneously obtained radiological findings in 1097 students. The great majority of the material is derived from the university tuberculous clinic at Oslo where the radiological diagnosis is made by the radiological department of the State Hospital; all the students are radiographed. The tuberculin tests have been carried out and interpreted by various doctors from my department at Ullevaal Hospital but the same procedure is always followed. All those examined were healthy without previous history of tuberculous disease and not vaccinated with BCG.

851 STUDENTS REGARDED AS TUBERCULIN NEGATIVE

	Total	Pirquet changes	Lung shadows	Calcified foci in lung or hilus
Pirquet 0 mm				
Mantoux 0 mm	585	43	12	0
Doubtful Pirquet or Mantoux	139	43	0	0
Two Pirquet tests, 0 mm	65	31	0	0
Single Pirquet test, 0-1 mm	61	0	10	32
1st Pirquet neg.				
2nd test Mantoux 1-0 mm	63	48	0	0

846 STUDENTS REGARDED AS TUBERCULIN POSITIVE

1st Pirquet, 0 mm				
2nd test Mantoux ≥ 10 mm (or Pirquet positive)	81	62	25	0
Pirquet 2 mm	40	0	0	0
3 mm	61	33	25	131
4 mm	94	0	41	132
5 mm or more	556	42	50	162
1st Pirquet neg.				
2nd test Mantoux 10-40 mm	89	34	1	1

neg. = reaction.

We see from the accompanying Table that the 851 students whom we have regarded as tuberculin negative fall into four groups:

- (1) First tuberculin test by Pirquet method and second test by Mantoux method give no measurable induration after 48 hours.
- (2) Doubtful reactions: first test (Pirquet) may be doubtful or feebly positive 1-5 mm induration; later Mantoux test negative or the later Mantoux test may give 1-0 mm induration (in some cases 10 mm or more but a further reaction is then negative).
- (3) Two successive Pirquet reactions negative.
- (4) A single Pirquet test with 0-1 mm induration as result.

In 846 students whom we have regarded as tuberculin positive there is first a group in whom the first test (Pirquet) is negative, the second test (Mantoux or in a few cases Pirquet) is positive. In the remaining groups only a single Pirquet test has been made and the reactions have been 2-3

4-5 mm or more (induration). In some cases giving a Pirquet of 2 mm, a Mantoux test has been carried out.

In the two groups tuberculin negative and tuberculin positive, I have also indicated by asterisks the results of a second test (Mantoux): the induration measuring 1-0 mm in the negative group 10-40 mm in the positive group. Among these last, 89 in number 62 gave induration measuring only 10-20 mm. The Mantoux tests are always carried out with tuberculin dilutions supplied in sealed ampoules (1/10 c.c.m. = 1 mg.) these are opened after the lapse of some days or weeks on occasion some months. A freshly prepared dilution of tuberculin gives as a rule a slightly more powerful reaction but, according to comparative tests we have recently made the difference is not great.

I have now grouped these tuberculin positive and tuberculin negative individuals according to the radiological findings. Three groups have been considered:

(1) Changes in the pleura usually diaphragmatic adhesions, sometimes thickening over the apex, but without changes in lung or hilus.

(2) Shadows in the lung fields, in some cases with changes in the pleura, but without calcification.

(3) Deposits of calcium in lung tissue or glands, in these there may be in addition pleural and lung shadows.

These radiological changes are distributed in the following way among those we have regarded as tuberculin negative and tuberculin positive respectively:—

The purely pleural changes appear with approximately equal frequency among tuberculin negatives and positives 0-05 per cent. The purely pleural changes are therefore clearly not of tuberculous aetiology but must be due to non-specific affections such as for example bronchopneumonia. The distribution of pleural changes which are combined with lung or hilus changes is not revealed in the Table.

The pure lung shadows without calcification presumably corresponding to a deposition of fibrous tissue are distinctly more frequent among the positive (0-09 per cent.) than among the negative (0-10 per cent.); they may obviously be due to non-specific lung infiltrations but are more frequently a sign of a healed tuberculous process.

Calcified foci occur though rarely among the definite tuberculin negative (0.7 per cent.) which is not surprising; there are other causes of calcification besides tuberculous—e.g. calcified lung emboli intra alveolar ossification; in pneumonia also there may occur necrosis of lung tissue leading to abscess formation and presumably also in glands; and where there is necrosis the conditions necessary for calcification are always present. In the group who received only a single Pirquet test with negative result there appear also two cases showing calcification; but here the numbers are so small that we must not lay much stress upon the percentage—3.2. We do not know either what result would have been obtained by a repeated Pirquet test on these subjects.

In the group which we have regarded as tuberculin positive we find calcified foci with much greater frequency but only when the Pirquet test has given an induration measuring 3 mm or more. The frequency of calcified foci in these groups varies from 12.2 to 16.2 per cent. These figures represent only a fraction of the calcified foci actually present; thus Friemann Dahl and Wæster by radiography of 200 excised lungs from autopsy material extending

over all ages, found calcification shadows in 71 per cent. Even though the frequency of calcified foci in our material is thus much less, we nevertheless find calcified foci in the positive groups approximately twenty times as frequently as among the purest negative group. This frequent calcification is therefore obviously an index of tuberculous infection, and this infection is revealed by a Pirquet reaction of 3 mm or more.

On the other hand, we have no calcification shadows in two of the groups of our material which we have regarded as tuberculin positive—namely, (1) those in whom the first Pirquet reaction is negative while the second test, Mantoux or Pirquet, is positive, and (2) those in whom the first Pirquet test gives a reaction measuring 2 mm. This finding strongly indicates that at any rate the great majority of these feeble tuberculin reactions do not correspond to tuberculous infection.

If we consider in particular those cases (indicated by asterisks in the Table) where the second test—a Mantoux test—has given a more or less pronounced reaction after a negative response to the first Pirquet test, we find only a single case with calcification. According to this it appears doubtful whether the Mantoux test performed after a negative or doubtful Pirquet test has any significance or is at all necessary. We must, however, qualify this conclusion in two ways. Firstly, a second tuberculin test can probably reveal a tuberculous infection if the reaction be sufficiently powerful, even though the first test was negative. In most of our cases the second reaction was of moderate extent, and we can therefore neither confirm nor deny the possibility of a "sensitisation" effect, but must regard it as possible. Secondly, we do not regard our figures as of universal application, it would seem that other Norwegian observers have found calcification in association with doubtful or negative tuberculin reactions more frequently than we have, and we are unable to decide whether this divergence is due to any difference in interpretation of tuberculin reactions or radiological appearances. Our radiological control applies therefore chiefly to the tuberculin technique we have employed among healthy subjects at about 20 years of age.

A clinical case, recently observed, appears to support our view.

A nursing probationer, on enrolment at Ullevaal Hospital gave on two successive occasions (each with two scarifications) a completely negative response to the Pirquet test (Sept 5th–7th and 7th–9th, 1936). A third tuberculin test by the Mantoux method with 1 mg tuberculin (Sept 9th–11th) gave a reaction with 12 mm erythema and 10 mm induration. She began work in the tuberculosis wards on Dec 22nd 1936. On Jan 26th, 1937 she developed erythema nodosum and a Pirquet test on Feb 25th now gave a vesicular reaction with 25 mm erythema and 10 mm induration. A radio gram taken on Feb 26th showed a small isolated opacity in the left infraclavicular region and the blood sedimentation rate on Feb 28th was 44 mm in 1 hour. There can be little doubt that this patient's Mantoux reaction showing 10 mm induration was non specific and that the erythema nodosum was evidence of a primary infection.

CONCLUSION

When by any method of investigation we wish to draw a line between two biological groups or conditions, such dividing line is always more or less arbitrary, in reality there will be some overlapping of the two groups in the region of the dividing line. We should therefore rather reckon with a dividing zone than a dividing line, but in practice it may be

necessary to draw a sharp line, and, in our material, this line should therefore lie between 2 and 3 mm. Induration after the first Pirquet test, a repeated tuberculin test does not as a rule appear to reveal any additional infected individuals unless it gives a very powerful reaction. All this applies to human infection, which is, practically speaking, the only type existing in Norway.

It therefore appears that in our Norwegian student material, so far from obtaining too few positive reactors as our critics assert, we have included too many.

INHIBITION OF THE GONADOTROPIC ACTIVITY OF THE HUMAN PITUITARY BY ANTISERUM

By I W ROWLANDS, Ph.D.

AND

A S PARKES, Sc D Camb, F R S

(From the National Institute for Medical Research,
London, N W 3)

THE prolonged injection of thyrotropic or gonadotropic extracts of ox anterior pituitary tissue into laboratory animals leads to their becoming gradually insensitive to the stimulating action of the extract and may even cause a condition of hypopituitarism such as is found after hypophysectomy (Collip 1934). This result was originally ascribed to exhaustion of the responding gland, but in 1934 Anderson and Collip showed that the blood serum of an animal chronically treated with thyrotropic extract would protect a second animal from the effect of the extract. The same thing was afterwards shown for gonadotropic extracts. These remarkable observations subsequently confirmed by other workers, have opened up wide fields of research.

The mechanism of the production of the anti thyrotropic and antagonistic substances is not understood. It may be said definitely that their site of origin is not the responding gland, since Oudet (1937) has recently shown that antithyrotropic activity can be evoked in the thyroidectomised rabbit. Probably no endocrine organ is involved. A recent attempt (Sulman 1937) to associate the phenomenon with Abderhalden's "protective ferment" does not appear promising. The most probable explanation is that the active substance or grouping is linked with a protein having antigenic properties and that the production of antihormone activity is an immunological reaction. If so, by analogy with thyroglobulin, further work may lead to the separation of the prosthetic group from the protein and to the production of active but non antigenic preparations. The antibody theory is supported by the fact that the activity of the antisera can be concentrated in the globulin fraction—Thompson (1937a) states that all the activity appears in the pseudoglobulin fraction of the antiserum, but this may vary with the species of the donor. The theory is further supported by Thompson's observation (1937b) that the continued injection of sheep pituitary extract into a sheep does not lead to its serum acquiring the power to neutralise the action of the extract on another animal. By Twombly's failure (1936) to find antihormone activity in the serum of a woman chronically injected with an extract of human urine of pregnancy, and by Katzman, Wade, and Doisy's analogous work on the rat (1937).

These results agree with our own experience, and almost exclude the possibility that antihormones of the kind produced experimentally play any part in the maintenance of the endocrine balance of the normal animal. It is as yet uncertain what degree of zoological relationship between the species from which the extract is made and the chronically injected animal is compatible with antihormone formation. Apparently a wide divergence may be required since ox pituitary extract does not seem to evoke a strong response in a sheep or pig pituitary extract in a goat.

There are other aspects of the specificity problem such as species specificity and source specificity in the effectiveness of antisera. It is known that sera of animals immunised to ox or sheep pituitary extracts will inhibit gonadotropic extracts of the pituitaries of several different species but the full range of effectiveness has not yet been investigated. Sources of gonadotropic extracts include pituitary human urine of pregnancy human placenta and equine pregnancy serum. It is likely that considerable immunological specificity will be shown between the substances from these different sources. Thus anti-serum to extract of human urine of pregnancy is not effective against ordinary pituitary extracts while antiserum for ox pituitary is only partially effective against extract of human urine of pregnancy (Rowlands 1937). Antiserum to gonadotropic extract of pregnant mare serum appears to be only partially effective against other types of gonadotropic substance (Thompson and Cushing 1937). One of us (I W R) has examined the interaction of many antisera and gonadotropic extracts and the results will form the subject of a detailed report.

For clinical application it is important to produce antisera capable of neutralising human thyrotropic and gonadotropic substances. Fluhmann (1935) was able to obtain serum from a number of rats immunised to human pituitary but such a technique would be impracticable on a large scale, and the problem is to find what antisera capable of being produced in bulk are effective against the gonadotropic or thyrotropic substances of human pituitary. We have not yet been able to prepare sufficient amounts of human thyrotropic extracts to test antithyrotropic sera but it is hoped to do so eventually. Human pituitaries however prove to have high gonadotropic activity and a comparatively small number have provided adequate material for quantitative experiments.

It has been found that rabbit antisera to ox and horse gonadotropic extracts are at least partially effective against the gonadotropic activity of human pituitaries, but this fact is at present only of academic value since extracts of ox and horse pituitaries are highly impure available only in limited amounts and doubtfully antigenic in animals large enough to provide adequate amounts of serum. Clinical possibilities are however suggested by the experiments described below which show that serum from an animal immunised to gonadotropic extract of human urine of pregnancy will obliterate the gonadotropic effect of human pituitary extract on test animals.

METHODS

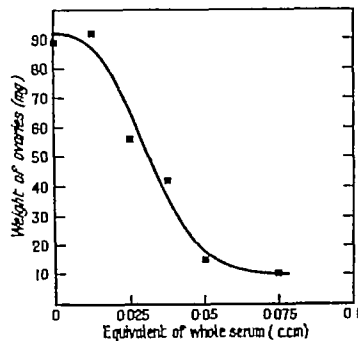
Antiserum to gonadotropic extract of human urine of pregnancy was prepared by subcutaneous injection of a 40 kg goat with 10 mg rising to 20 mg (1000-2000 rat units) daily of Pregnyl for five months. The response of the immature rat ovary as judged by weight was used to measure the activity of the Pregnyl and the effectiveness of the anti serum. Groups of ten rats (40-50 g) were given five daily

injections and killed 24 hours after the last one. The antiserum and the Pregnyl when given simultaneously were injected on opposite sides of the animal. The ovaries were weighed after fixation in Bouin's fluid. The ovaries weigh 10-12 mg without treatment a total of 0.25 mg of Pregnyl caused increase to about 35 mg which is slightly less than the maximum average size (40 mg) obtainable in this period by urine of pregnancy extracts (Deaneley 1935).

When the goat had been injected for three months 0.125 c.c.m. of the antiserum was capable of inhibiting that amount of urine of pregnancy extract required to give 35 mg rat ovaries. Assuming the goat to have had 1.5 litres of serum its total antigonadotropic power equalled 30 g of Pregnyl—i.e. about 20 times the amount administered over the three months. It has been found (unpublished data) that this anti-gonadotropic activity can be quantitatively recovered in the globulin fraction of the antiserum.

EXPERIMENTAL RESULTS

The anti-Pregnyl serum known to inhibit gonadotropic material from pregnancy urine was tested against placental gonadotropic extract and found to be effective. The crucial test against human pituitary



Capacity of anti-Pregnyl serum to inhibit the gonadotropic activity of a constant dose of 3 mg desiccated human anterior pituitary tissue

gonadotropic extract was then carried out. In a preliminary experiment on oestrous rabbits a saline extract of 10 mg. of fresh human pituitary caused ovulation in every one of a batch of ten rabbits. The same amount given with 2 c.c.m. of the anti-Pregnyl serum failed to cause ovulation in any of ten rabbits of another group. In an experiment on immature rats a saline extract of 25 mg. of human pituitary caused hypertrophy of the ovaries to an average of 70 mg. in a group of ten rats while one of 20 mg. given with 0.5 c.c.m. antiserum failed to alter the average weight which was normal at 10 mg.

It was decided therefore to construct a dose response curve for the power of the anti-Pregnyl serum to inhibit human pituitary gonadotropic substance. For this purpose a mixed batch of acetone desiccated pituitaries was prepared. A total dose of 3 mg. of this powder suspended in distilled

¹ The pituitaries used were from three accident cases in males and one female with grossening from 61 to 17 cm. Such pituitaries are about three times as potent as those from people under 45.

water, given over five days to a group of ten rats, was found to produce a very strong response (90 mg ovary weight). The same dose, together with varying amounts of the globulin fraction of the antiserum, was then given to further groups of rats. From the results shown in the accompanying Figure it can be seen that a total dose equivalent to a little over 0.05 ccm of the original antiserum inhibited the total activity of the 3 mg of human pituitary. The weight of the average human anterior pituitary after acetone desiccation is about 50-70 mg so that 1 ccm of the antiserum would inhibit the whole of the gonadotropic activity of one human pituitary.

It is impossible to say what the relation may be between content and output of gonadotropic substance in the human pituitary, but it is known that antiserum may be effective against the secretions of an animal's own pituitary (Parkes and Rowlands 1936, Rowlands 1937), and the above results indicate a strong probability that the gonadotropic activity of the human pituitary *in situ* might be inhibited by adequate amounts of the anti-Pregnyl serum and that a temporary, differential, serological "hypophysectomy" might be performed.

DISCUSSION

The interest of the above results lies in the possibility of successfully treating hyperpituitarism. The preparation of highly active extracts of ovary, testis, and pituitary may make it possible to deal adequately with conditions resulting from the hypofunction of these glands, but the hope of dealing with hyperfunction by endocrine therapy has seemed less good. Now, however, it seems that excessive secretion of the gonads or pituitary might be treated by passively immunising human subjects against their own pituitary hormones. Such a procedure would have great advantages over surgical interference in that the duration of the effect could be regulated, and the obliteration of pituitary activity would be differential. The serum described above would neutralise only gonadotropic substances, but further research may make available selective antisera for the thyrotropic and possibly other pituitary secretions.

SUMMARY

Prolonged treatment of a goat with urine of pregnancy extract (Pregnyl) resulted in its serum acquiring the power to neutralise, in test rats and rabbits, not only the effect of the original antigenic extract but also the gonadotropic activity of human anterior pituitary.

The activity of the serum was such that 1 ccm would inhibit the gonadotropic power of a whole human pituitary.

Our best thanks are due to Dr P. Hartley who prepared the globulin fraction of the serum, to Major G. W. Dunkin who undertook the immunisation of the goat, and to Dr Dorothy Russell who kindly obtained the human pituitaries. We are also indebted to Organon Laboratories Ltd. for the generous supply of Pregnyl.

REFERENCES

- Anderson E. M. and Collip J. B. (1934) *Lancet* 1, 76.
 Collip J. B. (1934) *J. Mt. Sinai Hosp.* 1, 28.
 Deaneley R. (1935) *Quart. J. Pharm.* 8, 651.
 Fuhrmann C. F. (1935) *Proc. Soc. exp. Biol. N. Y.* 32, 1595.
 Katzman P. A., Wade N. J. and Dolsy F. A. (1937) *Endocrinology* 21, 1.
 Oudet P. (1937) *C.R. Soc. Biol. Paris* 123, 1180.
 Parkes A. S. and Rowlands I. W. (1936) *J. Physiol.* 88, 305.
 Rowlands I. W. (1937) *Proc. roy. Soc. B* 121, 517.
 Sulman F. (1937) *J. exp. Med.* 65, 1.
 Thompson K. W. (1937a) *Proc. Soc. exp. Biol. N. Y.* 35, 640.
 — (1937b) *Ibid.* p. 631.
 — and Cushing H. (1937) *Proc. roy. Soc. B* 121, 501.
 Twombly G. H. (1936) *Endocrinology* 20, 311.

REGIONAL ILEITIS CROHN'S DISEASE

By JOHN C. HODGSON, M.D. Edin

HONORARY SURGEON TO ASHFORD HOSPITAL, KENT

THE reading of an article on Crohn's disease (Hurst 1936) has been illuminating in the reconsideration of a diagnosis made seven years ago.

In 1932 Crohn of New York drew attention to a not uncommon intestinal condition looked upon in the past as a hyperplastic tuberculosis of the lower ileum and caecum. He described the clinical picture and demonstrated that it was definitely not tuberculous. The morbid anatomy is that of an inflammation of the terminal ileum which may spread to the caecum, the affected segment becomes thick and oedematous and rigid, and this is followed by fibrosis and progressive diminution in the lumen of the rigid bowel. In the inflammatory phase adhesions and fistulae may develop, and although microscopically giant cells are found, yet no tubercle bacilli have ever been discovered and animal inoculation is negative. The clinical picture is one of progressive obstruction of the small intestine.

Since then numerous papers have appeared in America on the subject (e.g., Rosenblate, Goldsmith, and Strauss 1936, and Koster, Kasman, and Steinfield 1936) but the condition is only becoming recognised in England. Cases have recently been recorded by Dickson Wright (1935), Edwards (1936), Barbour and Stokes (1936), and Jackman (1934). A good account has been published in Holland by Snapper, Pompen, and Groen (1936), but Crohn's disease is apparently still unrecognised in other parts of the Continent.

Seven years ago a man aged 51 came under my care suffering from intestinal obstruction and at operation the provisional diagnosis of an inoperable carcinoma invading the ileum and proximal caecum was made. A lateral anastomosis was performed "to tide the patient over." He rapidly improved, put on 2 st in weight, and did a labourer's work and was lost sight of. Recently he came under my care again, suffering from a perforated duodenal ulcer, from which he is now recovering.

Hurst's paper had just been digested and this recently acquired knowledge, with fresh radiographic evidence, suggests that Crohn's disease was the probable diagnosis. A brief résumé of the case is therefore given in the belief that it may be useful to others who may meet with a similar condition.

CASE HISTORY

For 18 months the patient, aged 51, had complained of attacks of pain in the lower right segment of the abdomen. These attacks lasted about a week, often passed off for a few weeks. The pains were gripping and accompanied by distension—he became "blown out." His bowels alternated between constipation and diarrhoea, but especially the former and castor oil was the only medicine which would help him. Occasionally he vomited, his appetite was poor, and he had lost weight.

He was admitted to hospital, and the operation notes state: "Partial obstruction due to a bloodless band over the caecum, and partial volvulus from this. Appendix removed and band cut, nothing else abnormal found." After this operation he had five months freedom from all symptoms. Unfortunately, they returned, and twelve months later he came under my care. The pains had occurred more frequently, especially about one hour after meals, and in the right iliac fossa. His appetite had become poor, he was afraid to eat because of the pains food caused, and he had lost about 2 st in the last year, and actually 1 st in the last six weeks. For the

last six months his constipation had wholly disappeared, and he had instead three to four diarrhoeic motions per day. He vomited occasionally he had never been jaundiced, and he had never passed blood.

Examination.—A thin anæmic patient with abdomen distended in centre and flanks. Umbilicus stretched and bulging; visible peristalsis present of the small intestine type with loud rumblings. Some rigidity in right loin no mass felt; abdomen very resonant occult blood + Mild pyrexia present.

Radiography.—Great dilatation of the small intestine indicating an obstruction of the lower ileum and ileocolic valve. Unfortunately this plate was destroyed so no comparison is now possible.

Operation.—A large inoperable mass was found invading the terminal ileum and adjacent cæcum and the diagnosis of carcinoma was made. The naked-eye appearance did not suggest tuberculous. The ileum above this was very greatly distended almost to the diameter of the normal stomach. The mesentery was thickened and the mesenteric glands enlarged. A lateral anastomosis was made between the cæcum and the ileum above the growth. Recovery was uninterrupted.

At the recent operation the cæcal area could not be palpated for adhesions, and his general condition made speed imperative. Further radiography shows some remaining dilatation of the small intestine anastomosis satisfactory; filling defects in the terminal ileum and proximal cæcum

amounting to the string sign—a thin irregular linear shadow running through the filling defect. This string sign is described as very characteristic of the disease.

DISCUSSION

Crohn's disease seems to be the correct diagnosis in this case. The treatment usually advised in this condition is total excision of the affected segment since the disease tends to spread if not eradicated but this case suggests that simple short circuiting is sufficient in certain cases and should be seriously considered when the infiltration of the mesentery renders total excision dangerous.

My thanks are due to Dr E. Scott who did the radiological work in this case.

REFERENCES

- Barbour, R. F. and Stokes A. B. (1936) *Lancet* 1 200
 Crohn, B. B. (1931) *Amer. J. Dig. Disorders* 1, 87
 Edwards H. C. (1935) *Trans. med. Soc. Lond.* 59 87
 Hurst, A. F. (1936) *Practitioner* 137, 409
 Jackman, W. A. (1934) *Brit. J. Surg.* 22 27
 Koester H., Kasman L. P. and Steinfield W. (1936) *Arch. Surg.* 52 789
 Rosenblatt H. J., Goldsmith A. and Strauss A. A. (1936) *J. Amer. med. Ass.* 104 1452
 Snapper, J., Popena W. M., and Groen, J. (1936) *Ann. Surg.* 39 5
 Wright A. D. (1935) *Trans. med. Soc. Lond.* 58 91

MEDICAL SOCIETIES

WEST LONDON MEDICO-CHIRURGICAL SOCIETY

A MEETING of this society was held on April 9th Mr N. F. SINGLAIR, the president, being in the chair when a discussion on

Sudden Death

was opened by Dr B. T. PARSONS-SMITH. He said that as a general rule the cause of a sudden death could only be a matter for speculation until a post mortem examination had been made but that some times the patient's previous medical history might afford valuable evidence circumstantial evidence might be enough to justify a reasonably safe opinion when for instance, death followed a massive hemorrhage in a patient known to have been suffering from an aortic aneurysm or if it followed hemorrhage after operations or obstetrical accidents. Chronic disease did not necessarily explain sudden death. Sir William Osler had said: "It may seem paradoxical but there is a truth in the statement that persons rarely die of the diseases with which they suffer. In cases of sudden death a post mortem examination should be deemed necessary however convincing the circumstantial evidence." The speaker then discussed those cases in which the death was incidental to natural causes—i.e. when an acute or chronic disease ended fatally in a sudden and unexpected fashion. According to Glalster 1 per cent. of all deaths from natural causes were sudden and statistical evidence associated most of these with varying types of cardiovascular disease. The risk of sudden death was great in such conditions as aortic valve disease, specific aortitis, angina pectoris, coronary atheroma and myocarditis, both acute and chronic. The sudden syncope had been attributed to vagal inhibition but Lewis doubted whether permanent syncope could be produced in that way. Sudden death was nowadays associated with ventricular fibrillation which might develop in all types of human heart disease notably in digitalis toxæmia now fortunately less common than it once was. Fibrillation was also thought to be the immediate cause of sudden death following

straightforward fainting or vasovagal seizure and was probably the explanation of the fatalities which sometimes followed trivial accidents, sudden shocks and painful stimuli.

Hæmorrhage, arterial embolism and thrombosis were foremost among the vascular accidents which might have immediately fatal results. Pulmonary emboli deserved special mention because of their frequency and high fatality rate. Those coming from venous clots probably were more often fatal than not, while the relatively small emboli from intracardiac sources unless complicated in some other way were seldom fatal. Emboli of the major circuit, which arose most often from infective endocarditis and failure of the left heart might lead to sudden death, commonly by entering the cerebral or coronary arteries. Fatal results had also been recorded from their entering mesenteric and supra-renal vessels. Thrombosis apart from embolism might cause sudden death when it occurred in the heart or brain.

Dr EDWIN SMITH, coroner for the western district of London, said that coroners often found that post mortem examinations had been carried out too inadequately to ascertain the cause of death for instance sometimes the coronary or cerebral arteries had not been looked at. Neglect to open the stomach might lead to the concealment of important evidence for example in one case recalled by Dr Smith of sudden death during anaesthesia the anaesthetist had reason to be grateful to the pathologist who found 2 lb. of fæces in the stomach. Other examples of inadequate autopsy were a hæmorrhage while quietly at work had died suddenly the doctor had reported death as due to a fractured skull and suggested she had hit her head against a wall as she walked to work. On further inquiry the fracture was found to have been made at autopsy and death had been due to a stroke. In another case a small handkerchief rolled up at the back of the pharynx had not been found at autopsy and only came to light in the dissecting room.

Dr Smith thought a distinction should be made between deaths due to an anaesthetic and those occurring while under an anaesthetic. The legal

compulsion to notify a coroner of a sudden death was on the registrars and there was no law compelling a doctor to report the cases direct to the coroner. In practice, however, the coroner came to the coroner doctors to report direct to him cases which were bound to come to his notice. The mental state was sometimes very important in determining sudden death, for example in people with hardened arteries who had to make an after dinner speech. Dr Smith mentioned that he did not accept acute gastritis as a cause of death without amplification. In his district the registrars were required to report such certificates to him at once in order that the underlying cause of the gastritis should be ascertained. In conclusion he described the case of a man found dead in a cottage which had been struck by lightning, about half an hour before the storm, a man, known to have been on bad terms with the dead man, had been seen leaving the cottage. The jury solved a difficult problem by a verdict that the man had died 'from a visitation from God under suspicious circumstances'.

Dr T SKENE KEITH had analysed the last 800 cases of sudden death investigated by him and had found the following percentages from various causes: cardiovascular disease 60, pulmonary disease 6, diseases of the intestine 25, diseases of the central nervous system 15, renal disease 05, special conditions 6, stillborn 05, external agencies 21. For statistical purposes sudden death should be defined, and he would define it as a death which so surprised the doctor that he was not prepared to sign a certificate or when a certificate so surprised the registrar that he did not accept it or when death so surprised the patient that a doctor had not been called in. Deaths from surgical operations came under three headings. In the first group the patient had not the strength to stand a necessary operation either because the operation was too severe, for instance an abdomino perineal excision, or because the patient was already too reduced, as in advanced acute peritonitis. In the second group death was due to surgical misadventure. Those of the third group were due to status lymphaticus, a condition repeatedly declared dead but one which Dr Keith believed to exist, it was certainly found in anæsthetics frequently among children dying under anæsthetics than among those dying from road accidents. Deaths from external injuries included those due to birth injuries which were nearly always due to tentorial tears, these seemed to be found as often after natural and easy labours as after difficult and forceps deliveries. Dr Parsons Smith had said how much the doctor might miss the aid of autopsy in diagnosis, the pathologist might miss still more the doctor's contribution to the history. The number of cases coming to autopsy in which the doctor was to blame was remarkably small. The pathologist was not absolutely infallible, just as it was much harder to diagnose a fault in a car that would not start than in one that was running badly. The pathologist was up against the difficulty of lack of function. He could only say that he had seen similar appearances before and that they were compatible with cessation of life. While a definite opinion could usually be given on coronary occlusion or atheroma it was much harder to decide whether myocardial degeneration was a cause of death. Dr Keith was in the habit of looking in the stomach of these cases just to make sure. Ventricular fibrillation was a comfortable explanation as it allowed the heart to die at any time, it only shifted the burden of proof on to someone else. Death in heart cases was apt to be so sudden that at the Heart

Hospital, it was unusual for the resident medical officer to get to the bed in time. Dr G S HOVENDEN mentioned four cases of death in the puerperium, two of which he had signed up as due to air embolism and two to pulmonary embolism, he had been unable to decide which was the cause.

Mr H L ATTWATER had been struck by the comparative frequency of sudden deaths during comparatively trivial operations.

Mr G B WOODD WALKER had recently come across a museum specimen of a ruptured aneurysm of the circle of Willis which had occurred in a window cleaner. The pathologist had established that the rupture had occurred before the man had fallen off his ladder, the specimen had impressed upon him the importance of post-mortem examination especially in these days of compensation.

Mr J KEMBLE thought that patients dying on the operating table and those dying of post operative pulmonary embolism were alike in being of the sub thyroid type, sudden death of this kind was not so common among patients who had had pre operative thyroid therapy.

Dr GERALD SLOT pointed out the difficulty a pathologist had in coming to any conclusion about the state of the lungs after artificial respiration had been carried out for, say, half an hour. He had recently examined the body of a woman, found with a lysol douche beside her, in whom death had occurred without intracervical interference, such deaths were apparently quite common although douching in other circumstances was without risk. Coronary thrombosis, one of the commonest causes of sudden death in adult men, apparently occurred much more often than it used to do. Dr Slot spoke of the difficulty presented by the increasing number of undetectable poisons and the desirability of having a panel of medico legal experts to perform autopsies. Mr LEVY, speaking as a barrister, complained that doctors would use terms incomprehensible to the magistrate, lawyer, and jury.

Dr PARSONS SMITH, in reply, said the apparent increase in coronary thrombosis was due to its better recognition. Dr EDWIN SMITH said both the use of and the objection to medical terms were reasonable, he told how at an inquest on a man who had been shot in the sternum, the foreman of the jury had concluded that the man must have been running away. Dr SKENE KEITH, in reply to Dr Hovenden, said that the distinction between air and pulmonary embolism could have been made by autopsy.

ROYAL SOCIETY OF MEDICINE

SECTION OF PSYCHIATRY

At a meeting of this section held on April 13th, the chair was taken by Dr T A ROSS, the president, and Dr C P SYMONDS read a paper on

Mental Disorder following Head Injury

He confined himself to cases of closed injury—i.e. those without compound fracture—and omitted all focal lesions and traumatic epilepsy. The outstanding feature, he said, was loss of consciousness in some degree, if a man subsequently forgot what he had done he could be assumed to have been unconscious during the period of traumatic amnesia. The picture in concussion was dominated by the physical state of collapse, the mental state was one of profound stupor, from which the patient recovered

in a period of varying length. He might remain for some time in a state of automatism or this state might come on after an intermediate period of consciousness. Or recovery might take days, weeks or months constituting a state which resembled Korsakow's psychosis. It was these cases which afforded opportunity for detailed analysis of the acute traumatic psychosis. The prognosis was always good. A regular sequence of symptoms could be observed. They had been described as first the stupor then deep clouding of consciousness with resistances; clouding of consciousness with bewilderment and finally Korsakow's condition. All were included in the amnesia and it was better to treat the state as a whole, noting successive stages in which predominated stupor, confusion, and defective memory for recent events with tendency to confabulation. The stupor was accompanied by restless bodily movements and absence of response to stimuli except the deepest alimentary and protective functions. This state rarely lasted more than a few days. The patient then became excited and restive, he was wet and dirty and had to be fed and was sometimes delirious. This lasted for days, weeks even months with occasional relapse into stupor. When he began to be accessible he showed profound disorientation in space and time, defect of perception, memory and judgment, perseveration, disturbance of speech function, tendency to interpret events in the light of long past experiences, and very far reaching retrograde amnesia. There was a tendency to confabulate. The difficulties in perception played a large part in causing confusion as did also perseveration and the difficulty of distinguishing the figure from the background in the thought process. There was raised threshold and over reaction as in lesions of the sensory pathway at any level. Performance was unduly influenced by external events. Perseveration in thought, word and deed was a striking feature. Speech disturbance might be so prominent as to suggest a focal lesion but was only part of the general mental disorder. After the first return of automatic speech there was often a rush of jargon talk then the talk began to have direction though meaningless. At this stage the attention could be gained for a minute or two but responses were so little related to the requests as to appear to be at random.

An interesting illustration was afforded by the response of a patient to the written command. Under the second button of your jacket and do it up again. He had seized the correct button and fiddled with it but got no further and then asked: I rather wondered if you meant your second jacket or my second jacket? Was it your bottom you meant or my bottom? This threw some light on the basic confusion of thought which characterised the state. A month later he had appeared perfectly normal and he had since returned to work. Response to written commands returned more slowly than to spoken commands because it was more difficult to grasp the written sentence as a whole.

The transition to the Korsakow state was gradual. A tendency to confabulation continued when confusion had gone. It might lead to false accusations in relation to the accident. Gross defect of recent memory might remain the outstanding symptom for a long time. The mood affected the symptoms, elated easy going people confabulated readily. Sometimes the mood was indifferent; sometimes there was petulant childlike depression but elation was more usual. The end of the Korsakow stage was not clear cut. The patient of ten showed no insight, its

return was an important landmark. The longest record was that of a man of 67 who showed confusion and defective memory fourteen months after the accident but was well a month later. Age was not a bar to good prognosis. The pathological changes must be reversible to the extent of allowing restoration of function. The amnesia remained absolute for the stupor and confusion and patchy for the Korsakow stage.

POST TRAUMATIC DEMENTIA

In minor injuries the whole sequence was run through in a few minutes and in minimal injuries some stages were omitted. Some patients showed residual injuries which might be in some degree permanent. There was no relation between the duration of the traumatic amnesia and the severity of this post-traumatic dementia. Possibly it was due to coarse lesions slow to resolve and to some extent irremediable while the underlying condition in the traumatic psychosis was a molecular change easily reversed. The chief symptoms were alterations in mood, judgment and memory and scattered amnesia. The mood changes were often exaggerations of pre-existent traits. These symptoms varied with the age and constitution of the patient and with environmental stresses. This was in contrast with the acute condition which was rather an impersonal affair. Children showed behaviour disorders like those following encephalitis lethargica. Intellectual impairment was commoner in patients over 45. Patients of manic-depressive stock were especially liable to an attack of this disorder after an injury. Under any stress these patients tended to become sleepless, anxious and irritable. All tended towards recovery and residual disability was very rare apart from coarse lesions. Dr Symonds had noted he said of only two cases with permanent disability and both had had a previous head injury with apparent recovery before the causative accident. A persistent long retrograde amnesia indicated serious damage.

Injury might precipitate paranoia, schizophrenia or manic-depressive insanity by exaggerating previous traits and by creating a state of invalidism to which the patient reacted according to his style. There seemed to be a special liability of this kind in manic depressives. Symptoms might appear during the confusion of the traumatic psychosis.

Traumatic neuroathenia as loosely used covered three groups of patients: those who suffered from psychogenic hysterical or anxiety states; those really suffering from post-traumatic dementia; and those whose constitution was of the depressive or anxious type and in whom the injury released a condition which ran its course usually towards recovery.

Attempts had been made to explain the pathology in terms of increased intracranial pressure or sub-arachnoid hemorrhage but lumbar puncture often revealed a perfectly normal cerebrospinal fluid. The only conception of pathology left was the old one of direct molecular damage. The late effects could only be properly understood in the light of a full psychiatric study of the patient. It was not only the kind of injury that mattered but also the kind of head.

DISCUSSION

The PRESIDENT described his own experience of slight concussion due to a riding accident. He remembered his arm round the horse's neck then a dream state of which he had many memories and finally he came to in a farmhouse. He remembered a cold familiar but unplaceable landscape and a

babble of voices over his head, then he was on and off a horse, then he saw a haystack of which he hated the colour, then he walked and talked most politely with a young man. Actually his niece, who was with him, reported that he had sat on the ground saying repeatedly that it was bloody cold. She and a young man had tried to replace him on the horse and to get him sheltered behind a haystack. The selective memory was interesting. He wondered if the patients really had amnesia, or if rather they had dream memories, consecutive but inconsequential.

Dr T TENNENT reported on 44 patients admitted to the Maudsley Hospital between 1923 and 1936 who had stayed in from two months to two years. Eighteen of them had been admitted between 1933 and 1936. Four had proved to be general paralytics. The remainder had shown the symptoms described in the paper. In some, hallucinatory experiences and bizarre ideas became prominent as the confusion disappeared and none of these had recovered. Two had developed a manic reaction and five a depressive one. Children had shown moral change and intellectual deterioration. In 25 cases the form seemed attributable solely to the accident, all had marked memory impairment, six being of the Korsakow type. Some ex Service patients maintained the war was still on. All this group had recovered enough to be discharged and 22 had been followed up. Ten had remained well, nine were improved but had residual symptoms, two were in mental hospitals, and one was dead.

Prof E MAPOTHER thought that amnesia could not be identified with unconsciousness. He himself had had a concussion while playing football, a little after half time he had suddenly found himself playing in the opposite direction to the one he last remembered. He had assumed he had had a kick in the first half and played automatically but was now not sure whether the kick had not occurred immediately before "waking up" and he had suffered from retrograde amnesia for 10 or 15 minutes. The gradual emergence from coma was a most important study. He had seen the sequence, described by Dr Symonds, passed through in about an hour by a pedestrian knocked down by a car. There seemed a strong tendency to an orderly sequence.

Mr HUGH CAIRNS remarked on the extraordinary persistence of this reversal process, with ultimate recovery. He had seen symptoms start five days after an injury, coinciding with the onset of sepsis and cellulitis, and disappear as they cleared up. Symptoms might also coincide with the exhibition of barbiturate drugs. There must be a great deal of compensation going on, so that the patient could cerebration until some extra factor, like sepsis or drugs, complicated his state. He had known a patient write out his delirium afterwards, it had tallied with the ramblings noted at the time.

Dr W F MENZIES protested against the misuse of the term Korsakow's psychosis in the absence of peripheral neuritis, on which Korsakow had insisted. He recalled three pre-war cases. One patient had been able to repeat fifty lines of the *Odyssey* at a time after being hit by a boom, he had never looked at Greek since leaving school twenty years before. A second patient, a dement had fallen twenty feet on to asphalt and had suffered a fractured skull with permanent second and third cranial nerve paralysis, but had otherwise recovered rapidly and been no more demented after than before but became very bad tempered. This indicated molecular change. Compound fractures turned epileptic or very bad tempered because there had been fibrotic changes

and new blood vessel formation. The third had developed cerebral abscess three weeks after colliding with a lamp post, the surgeon had seen traces of meningeal disturbance when operating and had described the case in THE LANCET as "general paralysis without symptoms". The patient had completely recovered, but had a persistent difficulty in recalling proper names.

Dr E GUTTMANN described work on twilight states in boxers. The transient disturbance of consciousness through knock out was functional, post concussional delirium suggested organic lesion. Some boxers felt the knock out, some had seen it coming, others forgot the whole round.

Dr A W PETRIE referred to analogous alcoholic states, and asked whether all speakers meant the same thing by post traumatic dementia. Possibly the term might be confined to those who passed into permanent true dementia after injuries, and not applied to post traumatic instability.

Dr CLIFFORD ALLEN mentioned Janet's views on the structure of consciousness and said that patients had repetitive dreams with terror that something dreadful was about to happen. Accidents might be unconscious attempts at suicide in manic depressive personalities.

Dr PURDOY MARTIN said he grouped symptoms into amnesias, neuroses, negative symptoms, such as disorientation and confusion, positive release symptoms, such as restlessness, talkativeness, and noisiness—many of these patients had haemorrhage in the cerebro spinal fluid and all showed increase of protein—and late dementias. Some patients went into dementia after apparent recovery, and the good prognosis must be qualified by this fact. Observers had recently been finding excessive gliosis, especially in the frontal lobes. Elation was often present, it was to be regarded as a focal symptom, for it was often seen in frontal lobe lesions. It was associated with the symptom of jocularity and nearly always persisted throughout the illness. It might prevent realisation of headache and other symptoms.

Dr HENRY WILSON spoke of the relationship between the psychosis and the duration of confusional symptoms. The confusion might be enough to send a schizoid personality into schizophrenia. Great unhappiness and anxiety might be caused by it.

Dr SYMONDS, in reply, agreed that the patchy amnesia left a dream like memory, the termination of traumatic amnesia was not abrupt. The high proportion of residual disability in Dr Tennent's series might be related to the greater environmental stress in the hospital class and the different standard of employability. Retrograde amnesia was very brief—not usually more than half an hour. One patient had suffered a return of confusion on an attack of cystitis, the influence of sepsis was important. The post-traumatic dementia was not a mere instability but included a real failure to retain. Elation might accompany organic lesions in various parts of the brain.

NATIONAL BIRTH CONTROL ASSOCIATION.—A medical conference of this association will be held at 7, Drumsheugh gardens, Edinburgh, on Friday, April 30th. At 3 P.M. Mrs Helena Wright, M.B., will open a discussion on the technique of contraception, and at 8 P.M. Mr J R Baker, D.Phil., lecturer in cytology in the University of Oxford, will speak on recent advances in the scientific study of chemical contraception. Further information may be had from the headquarters organiser of the association, 26, Eccleston street, London, S.W.1

REVIEWS AND NOTICES OF BOOKS

Textbook of Medicine

By CHARLES PHILLIPS EMERSON M.D. Research Professor of Medicine Indiana University Assistant Professor of Medicine Cornell University (Ithaca) London: J. B. Lippincott Company 1936 Pp 1290 30s.

THE issue of a large new text-book of medicine prompts the question Is there something here that is not to be found in the standard books? One answer here is that Prof. Emerson has tried to set the clinical behaviour of disease in the forefront of his presentation. The incidence and the symptoms and signs of a disease come early in its description being the basic facts of medicine morbid anatomy bacteriological and biochemical findings follow on so that it may be seen just how far they elucidate disease—and how far they fail to do so. This is no fundamental departure from the common sequence but rather a shifting of emphasis, setting less store by the contributions of laboratory science and showing how medicine is still in great part a lore of disease and an art founded on generations of experience. Another answer is that this book is a bigger one than most of its fellows. The clinical descriptions are comprehensive and little historical sketches and even biographical notes on great men are included. Modern scientific work relevant to each subject is not ignored but is cited, often in smaller type or as a footnote and reference is made to important original publications.

The authors style has character to it he is always clear and succinct but is fond of tricks of inversion and apposition whose slightly stilted effect is often rather telling. Choice of type and general arrangement are good but misprints usually mix takes in spelling are numerous enough to be irritating. There are no illustrations. An immense labour must have gone to the writing of a book so fully documented and much of that labour has, in the nature of things, been spent on books rather than on patients. This leads inevitably to some distortions of which the statement that in the diagnosis of pulmonary tuberculosis when the clinical findings are inconclusive the X ray pictures are likely to be even more so is a surprising example. But it is clearly impossible in these days for a text-book of medicine to be informed throughout by detailed first hand experience. Few could have performed so well as he has the task which Prof. Emerson set himself and many students qualified and otherwise should find his work of great value.

L'infection bacillaire et la tuberculose

Fourth edition By A. CALMETTE. Revised by A. BOQUET and L. NÈGRE. Chefs de Service à l'Institut Pasteur de Paris. Paris: Masson et Cie 1936 Pp 1025 Fr 175.

Calmette made many contributions to the study of tuberculosis in the course of a busy life but probably none was more brilliant than the text-book which has now reached its fourth edition. Its well balanced exposition of the subject its breadth of outlook and its lucidity of expression have all contributed to make this work classic. Dr A. Boquet and Dr L. Nègre in their revision have been mindful of the tenets of their late colleague and have brought the work up to date without deviating from

the original point of view or changing the personal note. As far as possible footnotes indicate which of the two editors is responsible for the new material.

More than one hundred pages have been added and the book is now bound in a serviceable black cloth board cover which is a great improvement on the old paper one. The new sections include fresh descriptions of recent improvements in the clinical pathology of tuberculosis such as the technique of gastric lavage and various new culture media. Chapters have been inserted on the differentiation of human and bovine strains and on avian strains by Dr Boquet as well as a section dealing with the dissociation of colonies which is demanding much attention at the present time. Dr Nègre has enlarged the chapter on the ultra virus of tuberculosis whilst maintaining the general thesis concerning its existence. The sections dealing with BCG vaccine which was Calmette's last great contribution to the study of tuberculosis have been expanded to include new work. It must have been difficult, especially here, to know what to leave out and what to insert but it seems a pity that old statistics on the fate of children born in tuberculous households should have been used where modern figures are available—notably the figures quoted for London on p. 853 and for England on p. 949. These are but small blemishes in a book which has earned and will continue to earn the gratitude and respect of all students of tuberculosis. It is noteworthy that the only English version of this work is that which W. B. Soper and G. H. Smith translated from the second French edition and published in America in 1923. This new edition merits translation.

Towards Peace of Mind

By KARL M. BOWMAN M.D. Chief Medical Officer Boston Psychopathic Hospital, London George Allen and Unwin Ltd. 1936 Pp 278 6s.

THIS volume stands midway between a popular exposition and a text book suitable for students. Its outstanding virtue is to combine a sound appreciation of heredity and neurology with an accurate and dispassionate exposition of Freudian psychopathology. While numerous references are made to recent advances in the study of the nervous system and of the mind the aim of the book is never lost sight of and the pursuit of mental health is illustrated by theory, clinical examples and therapeutic advice. The book can be strongly recommended to all practitioners who want a scientific and human exposition of modern psychological medical aims.

Operative Surgery

Second edition. By ALEXANDER MILE M.D. F.R.C.S. Edin. Consulting Surgeon Royal Infirmary Edinburgh and D. P. D. WILKIE M.D. F.R.C.S. Edin. and Eng. Professor of Surgery University of Edinburgh. London: Humphrey Milford Oxford University Press. 1936 Pp 631 21s.

In this edition the text has been completely revised, and the revision has been done well. In all the main things the teaching appears to be sound but a few procedures might have been eliminated and naturally some advice is given with which all

will not agree. It does not seem necessary, for instance, to mention the use of bone chips or wax or sponge for filling a septic bone cavity. Again, for stopping a cavity in the head of the tibia the use of the gastrocnemius is more crippling than that of the sartorius. We are told (p. 121) that the shaft of the humerus can be exposed by an incision "made through the appropriate muscular interspace," without specifying what this space is. The omissions include that of the occipital approach to the fifth nerve. But the extraordinary amount of information given is nearly always good and is invariably sponsored by some eminent authority. No student up for a higher surgical examination will go wrong if he hands out the teaching of this book to his examiners.

Clinical Handbook for Residents, Nurses, and Students

Second edition. By Members of the Staff of St Vincent's Hospital, Sydney. Edited by V. M. COPPLESON, M.B., Ch.M., F.R.C.S., and DOUGLAS MILLER, F.R.C.S., F.R.A.C.S. London and Sydney: Angus and Robertson, 1936. Pp. 205. 6s.

THIS is a book of instructions for the medical student or the resident touching the hundred and one things that he must learn to do with his hands, such as sterilisation, use of needles, collection of specimens for pathological examination, giving anaesthetics, examination of urine, and so forth. It includes sections on the nursing and management of ophthalmic, ear, nose, and throat and gynaecological cases, the treatment of common skin conditions and of poisoning, preparations for X-ray examination, the use of plaster, and various other topics. Only the routine practice at St Vincent's Hospital is described, and the descriptions are simple, clear, sound, and practical, blood transfusion, for instance, is given with citrated blood, a funnel, and a tube, and no other method is mentioned. Not every hospital takes the trouble to see that its students are well trained in these routine matters of technique, and St Vincent's Hospital is to be congratulated on providing its residents, present and future, with such a comprehensive and workmanlike manual.

Fundamentals of Bacteriology

By MARTIN FROBISHER, Jr., B.S., D.Sc., F.A.A.S., Associate in Bacteriology, Johns Hopkins University. London: W. B. Saunders Co., 1937. Pp. 474. 14s.

EVER the bacteriological enthusiast, proud of his subject and convinced of its educational value might be staggered by the opening words of the preface of this little book. "With bacteriology in its present state of development, no one can be said to have acquired a complete cultural education who remains uninformed concerning the unicellular fungi of the class *Schizomyces*." This certainly argues a very broad or a very narrow conception of the "complete cultural education," it is hard to decide which. But the author's later modification of the statement that a knowledge of bacteria "not only increases one's general usefulness but greatly broadens his view of life and sharpens his appreciation of the subtlety of nature" is one that (barring its verbal construction) will be endorsed by everyone familiar with the subject. It is to introduce bacterio-

logy to the general but cultured reader that Dr Frobisher has written his interesting and accurate little book. The subject is well set out in historical perspective and the many activities of bacteria in nature beyond their pathogenic rôle are attractively described.

Within its scope it is one of the best introductions to general bacteriology we have seen and it is just the kind of book which a student of medicine who has become interested in bacteriology for its own sake might profitably read.

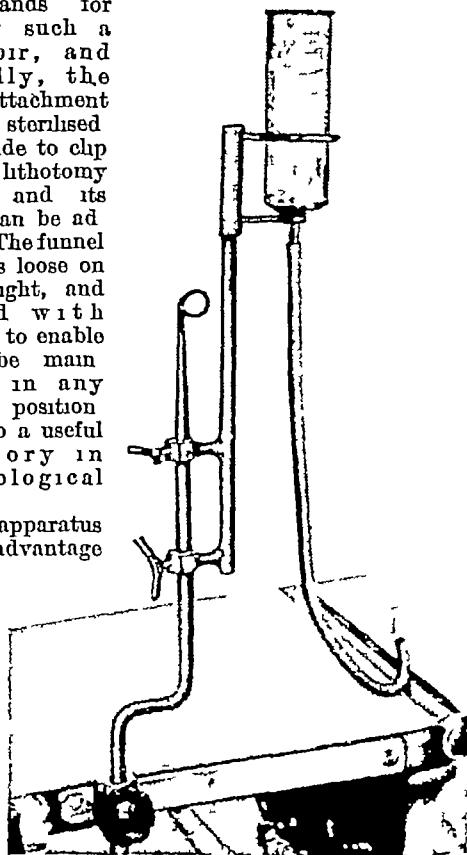
CORRIGENDUM—"What is Osteopathy?" The authors of this book, which received appreciative notice in our columns last week, are Dr Charles Hill, deputy medical secretary, British Medical Association, and Dr H. A. Clegg, deputy editor, *British Medical Journal*. Mr H. G. Wells contributes a preface.

NEW INVENTIONS

A NEW DOUCHING ATTACHMENT

THE douching attachment here illustrated has been designed with two objects in view. First, it provides a lotion carrier for use with a cystoscope, and so eliminates separate stands for holding such a reservoir, and secondly, the whole attachment can be sterilised. It is made to clip on to a lithotomy crutch, and its height can be adjusted. The funnel carrier is loose on the upright, and fitted with "dogs" to enable it to be maintained in any desired position. It is also a useful accessory in gynaecological work.

The apparatus has the advantage



of being portable, and can be used on any table that has a suitable lithotomy crutch pole. It has been made for me by Messrs Allen and Hanbury, London, W.1, to fit the St Bartholomew's operating table.

CHARLES E. KINDERSLEY, F.R.C.S.,
Surgeon to the Royal United and Royal
Mineral Water Hospitals, Bath.

THE LANCET

LONDON SATURDAY APRIL 17 1937

THE FUTURE OF OUR POPULATION

THE observant man can hardly be blamed if he has a feeling of bewilderment tempored perhaps by scepticism when he considers the figures relating to population. For years economists and other experts have made the spectre of over population dance before his eyes. He has been told that poverty and misery must be reduced by volitional control of the size of the family—that the 'planned' family is the ideal at which we must aim. There seems moreover ample justification for the argument. He knows that the population of our country has shown a phenomenal increase that it has multiplied nearly fivefold in rather more than a century and that it now depends largely upon distant sources for its food supplies. Looking even casually around him he seems to see additional evidence on every side: there is a continual encroachment of the town upon the country, building activity in every direction, town planning schemes in operation or visualised, traffic congestion on road and rail affecting his everyday life, depressing figures of unemployment, unsatisfactory diets amongst the larger families in the poorer strata of society and an annual excess of births over deaths so that the numbers in the country continue to increase.

And yet the expert now tells him that we are seriously threatened with depopulation. In the daily press and in books and pamphlets he is warned gravely that our population must shortly follow a downward path that unless people soon begin to have more children we shall be threatened with extinction that a Royal Commission ought at once to be appointed to discover the facts and to formulate a population policy.¹ What is he to believe? What is the explanation of the seeming paradox? An excellent attempt to answer these questions in simple terms has now been made by the Population Investigation Committee. This body formed last autumn under the chairmanship of Prof. A. M. CARR-SAUNDERS includes representatives of the British College of Obstetricians and Gynaecologists, the Medical Research Council, the Royal Economic Society, the Society of Medical Officers of Health, the British Population Society, the Eugenics Society and a number of medical and economic authorities. It was formed to examine the factors influencing contemporary trends of population in England and Wales with special reference to the fall of the birth rate. Its first task has been to consider the recent history of our population to determine how its prodigious growth has taken place, what effect the declining fertility rate is

likely to have upon its future size and constitution and what have been the basic causes of that fall in fertility. The results of these inquiries are set out in a pamphlet prepared for the committee by Dr. O. P. BLACKER and Mr. D. V. GLASS. When the population began to increase towards the end of the eighteenth century it is possible that there was some rise in fertility, but the evidence is scanty. Throughout the nineteenth century the rise was certainly not due to an increasing birth rate but to a falling death rate. Between 1838 and 1913 the births annually exceeded the deaths by about 300,000; in the decade 1914-23 the excess was only 220,000; a year in 1934 it had fallen to 121,000. Though there is likely to be an excess in 1937 it will be still smaller, and in another five years or less that excess will have vanished. One result of this falling birth rate is the raising of the average age of the population. In time this must lead to an increase in the crude death rate—although with further advances in medical science and public health the death rates at ages may continue to decline. A population that contains a large proportion of old people must have a relatively high death rate and it is on this rate, in conjunction with the fertility rate, that the growth of the population must depend. With an ageing population we clearly cannot depend upon favourable changes in the death rate to maintain our numbers. To take a simple example, Dr. G. F. McCLEARY has shown² that the effect on population growth of an entire elimination of infant mortality would be completely neutralised by a reduction in the birth rate of less than 1 per 1000. It is mainly on fertility that the future population must depend and although at present the birth rate remains higher than the temporarily lowered crude death rate it is now well below the replacement rate. It is in fact to this rate that we must look and the figures of the 1931 census of England and Wales show that persons aged 20-35 were more numerous than the young persons in the age groups 0-15; in other words there were in 1931 not enough young people to replace the men and women twenty years older than themselves. With the aid of a relatively new statistical technique the level of this replacement rate can be measured—by an index known as the net reproduction rate. Briefly this expresses the number of women who in the next generation will replace the women of reproductive age in this generation. In the words of BLACKER and GLASS:

If the women of reproductive age in this generation who are mothers of children are having sufficient girl children to replace themselves as well as the women of their age who are childless, the net reproduction rate is 1 or unity and the population is maintaining itself. If allowing for deaths they are not having enough girl children to do this the net reproduction rate falls below unity and the population is not replacing itself; if they are having more girl babies than is necessary

¹ The Future of Our Population. By O. P. Blacker and D. V. Glass. Issued by the Population Investigation Committee, 69, Leicestershire Square, E.W. 1. 1p. 31. 6d.

² The Science of British Depopulation. By G. F. McCleary. 31d. London: George Allen and Unwin, 1935. 17. 16d.

for this purpose, the net reproduction-rate is above unity and the population will increase."

Dr ENID CHARLES⁴ has calculated that in 1933 the figure for England and Wales was only 0.734, or according to the fertility- and mortality-rates of that year 1000 women of reproductive age were producing only 734 girl children who would grow up to replace them in the next generation. The figure is below unity in most of the countries of western Europe and, as McCLEARY emphasises, amongst the British born in the Dominions. It is easy, though laborious, to calculate the downward path along which this present position must lead us, and an example of the calculation, by Mr C. A. GOULD, is given on p. 944. Naturally the further ahead we endeavour to prophesy the more we may deviate from the truth. But even if fertility ceases to decline below its present level we are faced with a declining population in the near future, and with a population that some believe will deteriorate in quality as well as quantity, through the effects of differential fertility.

As BLACKER and GLASS admit, many good arguments can be urged for preferring a stationary or a slowly growing population to a rapidly expanding one, but a declining population is quite another matter. Only an increased fertility can avert it. Is that a likely event? Are there any means of encouraging it? Unless we know the reasons for the falling birth rate we clearly can take no steps to arrest its decline. In the second section of their pamphlet BLACKER and GLASS devote themselves to this subject. Sterility they think is not increasing and they lay more stress on social and economic reasons—the difficulty of parents supporting more than a small number of children, of finding them suitable employment as they reach maturity, of giving them and themselves the social advantages, comforts, and standards of life that they desire. Under psychological reasons they refer to the parental instinct that is satisfied by one or two children—"when parenthood is being increasingly planned, the strength of the desire for children as measured by the number of children by which it can be adequately satisfied, comes into an entirely new prominence as a biological factor to which is attached the clearest survival value." The uncertain political and social condition of the world must also play its part. Fertility cannot be raised, they conclude, unless there is a change of attitude of the kind they call "psychological" about the family, unless people can somehow be inspired to want children. McCLEARY is much of the same mind. Though he is satisfied that economic factors are at work, he thinks that the really important causes of depopulation lie deeper in the conditions of modern life. "If babies are not to be had for love they are not likely to be had for money." Certainly the efforts by the latter means taken in Germany and Italy have been attended by no striking success,⁵ though the economic incentives offered may well have been

too small. But if effective action is to be taken we must know more of the possible factors that are thought to influence people in restricting their families. This problem the Population Investigation Committee hopes to investigate, and an appeal is made for funds to enable it to do so. There are two lines it wishes to follow—namely statistical analysis and direct inquiry. Under the first, calculation may be made of the extent to which people living in different regions, urban and rural, and working in different industries and occupations, are replacing themselves. Under the latter, by questionnaire, further light may be thrown on differential fertility, on medical causes of infertility, on the degree of success attending contraception, on the effects of uncertainty of employment, on the "psychological" factors involved. Perhaps, as some have argued, there is a law of population growth or there are, as BROWNLEE believed, changes in germinal vitality that we cannot influence. Perhaps, as others believe, "the innumerable distractions of modern life are far more tempting to the average man and woman than is the bringing up of children," the only remedy for which is the "reawakening of the race as a whole to its responsibilities as a civilising factor."⁶ The problem is exceedingly complex, but of vital national importance if "western civilisation is not to go the way of Greece and Rome to decay and death." That fear some may think unduly alarmist, but the pamphlet under review shows clearly the experts' reasons for disquiet. It gives no one an excuse for remaining ignorant of the situation.

NEW METHODS OF IMMUNISATION AGAINST DIPHTHERIA

To protect a particular child against diphtheria is comparatively easy: there is a wide choice of immunising agents and methods which are all reasonably satisfactory for the purpose. To protect a community is far less simple, since the method adopted must be uniform, must give as complete and lasting protection as possible, must not produce serious reactions, and must be cheap and manageable. The dilemma is well known and no way of circumventing it has been found. The difficulty is that, on the one hand, a single injection either fails to give immunity in a satisfactory proportion of cases or causes too severe reactions, while on the other hand, mothers do not like to bring their children for a series of injections, particularly if these have to be repeated at intervals in order to keep the antitoxin at a suitable level.

A possible way out was demonstrated by Prof. CLAUS JENSEN, director of the department of biological standards at the State Serum Institute of Copenhagen, in a paper given to the epidemiological section of the Royal Society of Medicine on April 9th. The method he adopts, which is supported by many years' work and much experiment, is a single subcutaneous injection of Schmidt's

⁴ *The Twilight of Parenthood*. London, 1934.

⁵ *The Struggle for Population*. By D. V. GLASS. Oxford, 1936. See *Lancet* 1936 2 441.

⁶ *Daily Telegraph*, April 6th, 1937.

purified aluminium hydroxide toxoid followed by intranasal instillations of purified toxoid dilution. His conclusions are based entirely on quantitative estimations of antitoxin which clearly afford more accurate information than for example skin reactions. Various series of rabbits, children and adults first had their natural antitoxin quantitatively determined and then were divided into four groups according to the amount of circulating antitoxin—i.e. less than 0.0005, less than 0.01, less than 0.10 and more than 0.10 antitoxin unit per c.c.m. Four weeks after the single injection of purified $Al(OH)_3$ -toxoid the groups were redetermined and this was done again after 6 or 3 nasal instillations at stated intervals. The results were ingeniously shown by what Dr JENSEN calls antitoxin spectra—i.e. coloured histograms resembling the appearances seen in spectroscopy. In all three groups (rabbits, children and adults) the results appeared to be excellent: the effect of the intranasal instillations being greatest in those who gave a poor response to the subcutaneous injection. There were no reactions to the nasal instillations in children but in adults (probationer nurses) transitory headache, nausea or fatigue were occasionally experienced. Of the children 100 per cent developed more than 0.01 unit of antitoxin six weeks later and 96 to 100 per cent developed 0.10 unit or more. Nine months afterwards the immunity appeared to have fallen off considerably but the response to nasal reimmunisation only after twelve months was even better than to the original combined treatment. In the group of 319 probationer nurses 94 per cent developed more than 0.01 unit and 85 per cent more than 0.10 unit while 1 per cent were refractory. Dr JENSEN is sufficiently convinced of the value of his method to recommend its adoption for all children without preliminary or control Schick testing. Mass immunisation of the child population against diphtheria has not been attempted in Denmark hitherto; the experiments recorded being confined to schools and institutions. This is partly owing to the rarity of epidemics of diphtheria in Denmark and partly to deliberate abstention until the most efficient and practical method had been determined. But diphtheria is prevalent in many of the surrounding countries and the proportion of natural immunes in the child population is low—far lower than in England for example—and the danger is therefore considerable. Dr JENSEN hopes that the Department of Health will now start a drive for immunisation and thinks that by efficient propaganda nearly the whole of the children of Denmark—some 700,000—might be immunised by his method within about a year and the immunity kept up by repeated annual intranasal instillations.

In sum several definite advantages may be claimed for JENSEN'S method and since pre-sent methods are not entirely satisfactory, bacteriologists and public health authorities should examine his claims with care. Whether in England it would be thought advisable to entrust the intranasal instillation to the mothers is doubtful; perhaps the health visitor would be a more suitable

agent. But anything which smooths the path between academic and practical immunology is welcome and the careful work done in Denmark as well as its attractive presentation demands serious attention.

THE MEDICINE DUTIES AND THE CHEMIST

THE Select Committee on the Medicine Stamp Duties was somewhat ruthless in its recommendations. It was natural that its report should display impatience at the continued retention on the statute book of legislation like the Medicines Stamp Act of 1812 with its list which begins with Adam's Solvent, Addison's Re-animating European Balm and Aethereal Anodyne Spirit and ends with York Medicinal Preventive Lotion and Zimmerman's Stimulating Fluid. The committee of course was concerned with the revenue aspect not with pharmacology and it is reasonable to suppose that the CHANCELLOR OF THE EXCHEQUER will take no step in his forthcoming Budget without careful consultation with the interests specially affected. Strong protests are meanwhile being made against the proposals in the committee's report. The recommendation that with a few exceptions all drugs and medicaments, herbs, disinfectants and soaps should be made liable to a duty based on the retail selling price is a proposal for a novel and irritating form of sales tax. It is urged that the State should not single out for taxation those medicinal substances which are used by persons in ill health. The weapon of taxation it is said will be employed to discourage a proper statement upon labels and accompanying literature of the conditions in which a medicine is to be taken. Manufacturers will cease to have any inducement to disclose in their labels the composition of their medicaments with the result that we shall return to the abuse of secret remedies. Prescribing over the counter would be embarrassed; the last surviving privilege of the pharmaceutical profession, the chemist's right to prescribe and sell his own medicine to his customers without having to stamp it, would disappear. The consultative value of his training would be belittled. If the customers ask for an ounce of castor oil they will get it at the normal price of so much oleum ricini. But if they ask him to suggest an aperient or if they mention castor oil and ask his advice about the dose, he will have to affix a stamp and pay the duty.

The general position of the registered pharmacist seems to be threatened by the committee's report. It observes that the Act of 1783 was intended to tax the quack and to exempt those bred to the profession of physician or apothecary. But observes the committee, qualified chemists have in effect obtained the privilege of selling the bulk of their ready-made preparations duty free while precisely the same preparations if sold by a grocer must pay duty. The committee seems to doubt the benefit of specialised pharmaceutical training. Is there no safeguard to the public in the presence of a registered pharmacist on premises where medicines are sold? The committee apparently

thinks this protection is illusory—at any rate on premises where there are large sales of ready-packed medicines. It may be doubted if Parliament or the public would share this very depreciatory opinion.

IMPROVEMENT OF POSTURE

Mr PHILIP WILES has chosen a good moment for presenting his views on postural deformities—the subject of his Hunterian lecture published in our present issue. At a time when much is being said about the need for improved physique and the Government is prepared to spend money to this end, the nation, like other sick persons, may suffer from contradictory advice. It is therefore important, wherever possible, to collect information that will fill the gaps in our knowledge, so that there may be no doubt as to what are the fundamentals of physical efficiency and the methods by which they may be attained. When “physical training” is going to be made available for every child and adult in the country, it is necessary for example that zealous organisers should not remain ignorant of the dangers of haphazard application of gymnastic exercises to anyone and everyone. Physical exercises, as LEDENT¹ puts it, should be regarded as a drug, and no drug has equally beneficial effects on all patients at all times and in the same dose.

In his lecture Mr WILES brings together facts gathered during many years by many workers, both here and abroad. To these he adds observations he has made with an ingenious gauge for measuring the pelvic tilt. These observations, though few in relation to such surveys as that made by the Board of Education in 1935, will be found very interesting. He rightly points out that as the pelvis is the base of the spine, its axis has a fundamental effect on the attitude of the parts above. The question is whether he does not pass rather too lightly over the influence of the parts below—the knees and feet for example, which form the actual pedestal for the human machine. Although he accepts as correct GOLDTHWAIT'S straight axis for the human body, passing through mastoid, shoulder, hip, front of knee, and ankle, his photographs of “normal” persons would not coincide with GOLDTHWAIT'S satisfactory posture. In regard to posture, more perhaps than anywhere else in medicine, it is difficult to get any two practitioners to agree to the same definition of “normal” and “efficient.” Our ideal for the human race is by no means synonymous with survival value in evolution. The biologist points out that the amoeba has survived from primeval times and is biologically as efficient as the most brilliant scientist. Physical strength does not necessarily imply strength against disease, and on the other hand the weedy slum dweller, with his comparative efficiency in the war against bacteria, might easily be bowled over by an overdose of “physical training.” Though Mr

WILES refers to it, he does not perhaps put quite enough emphasis on the necessity of balancing the prescription of exercise with a correspondingly weighty dose of rest. This is implied however in his insistence that posture is a function of the central nervous system as a whole, and that its improvement depends on the patient's coöperation and on the restoration of a series of reflexes whose pattern has been disturbed by such disorders as rapid growth, toxæmia, or anxiety. The emotional factors influencing posture can scarcely be exaggerated, but if we were to argue too closely from the physical to the mental, the sight of any gathering of ordinary people—even a medical audience—would bring despair for the intellectual prospects of Britain!

Not all will agree with Mr WILES in making light of the influence on growing tissues of such external factors as violins and school desks. HUNTER demonstrated the plasticity of adult bones in response to the strains of various trades. He is on firmer ground in condemning attempts to “stretch” muscles and ligaments by force, since it is now recognised that muscles can only be lengthened satisfactorily by encouraging their reflex relaxation, as their antagonists contract, while ligaments yield best to persistent traction in their long axis. It should not be forgotten that lying on the ground provides just that resistance to the flexors, and support for the extensors, which Mr WILES recommends as the basis of exercises for correction of posture.

BRUCELLA MELITENSIS IN THE UNITED STATES

EXCEPT in the hog raising district of the middle west, where infections with *Brucella suis* are common, undulant fever in the United States is nearly always due to *Br. abortus* which comes directly or indirectly from the cow. *Br. melitensis* infections have so far been restricted to the south western States where some goat's milk is drunk. From a survey by Miss Alice C. Evans,¹ of the National Institute of Health it seems possible that infections with the *melitensis* type may be rather commoner than has been apparent, and that infection may sometimes be distributed by cow's milk. Using the quantitative absorption technique she examined sera from 27 patients having a titre of 1/160 or over. The results suggested that 14 were infected with the *abortus* and 13 with the *melitensis* type. Of the patients in the latter group 5 lived in North Carolina and 6 in Texas—both States in which goats are few. It is doubtful however whether this justifies the conclusion that these patients must have been infected from cattle. That cattle may be infected with *Br. melitensis*, and that human beings may contract undulant fever from cow's milk containing this organism, has been amply demonstrated by Taylor and his colleagues at Montpellier. But the evidence contained in Miss Evans's present paper is only circumstantial. Cows have never been found to be infected with the *melitensis* type except when running with goats, and the risk of their being infected in areas free from goats seems slight. In this country indigenous *melitensis* infection has never been satisfactorily demonstrated.

¹ Ledent R., Les erreurs gymnastiques. *Scalpel* April 3rd 1937, p. 430.

¹ Evans A. C. (1937) *Publ. Hlth Rep. Wash.* 52, 293.

ANNOTATIONS

AN INTERNATIONAL ASSOCIATION OF THE MEDICAL PRESS

A MOVEMENT was projected from Milan last summer for the organisation of an International Association of the Medical Press and the preliminary statement was to the effect that the first president would be Dr Hans Spatz the editor of the *Munchener Medizinische Wochenschrift* the first treasurer Dr Benno Schwabe and the secretary general Signor Santo Vansias giving his address as Ca della postale 3395 Milan. Among the council the names were printed without any previous sanction of the editor of *The Lancet* and the editor of the *Journal of the American Medical Association* together with the editors of a dozen or fifteen other medical journals who may or may not have given permission. The editor of *The Lancet* not being satisfied that anything practical at the present stage of European politics could develop from the movement asked that his name and that of *The Lancet* placed on the circular without approval having been asked should be removed. Dr Fishbein, editor of the *Journal of the American Medical Association* being communicated with said that his name and that of his journal also appeared on the circulars without any authority and he enclosed to us a copy of a letter in which he had protested against the treatment he had received. Dr Fishbein was more fortunate than the editor of *The Lancet*, for he obtained a courteous statement from Signor Santo Vansias the source of all the communications in the following words: "I was merely showing the basis for my future work in case of acceptance. According to your wishes I cancel my previous indications although I have confidence that your ideals agree with mine. The editor of *The Lancet* not only received no assurance that the references to the paper and to himself would be cancelled but finds that his name and that of *The Lancet* still remain on the circulars. In the last circular received the name of Dr Hans Spatz is still given as president of the projected Association and that of Dr Benno Schwabe as treasurer. We have now received a communication from Dr Hans Spatz that his name has been used without his authority and that, in spite of repeated protests it has until now not been expunged from the lists. He adds also that false announcements of his appointment as president have been made in the German daily press. Further Dr Spatz has been informed by Dr Benno Schwabe that the printed statements of his position as treasurer to the movement have been made without his consent. Dr Hans Spatz has published in the German press the withdrawal of his name from the Association with a criticism of the extraordinary procedures of the secretary general. In publishing this repudiation by *The Lancet* of any connexion with the movement, we are asked by Dr Spatz to associate his name with our protest."

DEFICIENCIES IN ULCERATIVE COLITIS

ONE of the most interesting aspects of biological processes is the way in which a specific effect however brought about always tends to set up the same train of events. If a number of causes bring about the specific effect the resulting train of events may be common to a number of conditions although modified and supplemented in each of them by the particular exciting cause. The appreciation of these syndromes which are common to a number of diseases

is of enormous importance in theoretical medicine although practical medicine—the slave of diagnosis—depends more upon the recognition of the particular response. The rise of body temperature (and its inevitable sequelae) which accompanies many toxic processes is a good example of a general response that may be produced by many different stimuli. Another example is salt deficiency which is common to Addison's disease, pyloric stenosis, excessive sweating, diarrhoea and vomiting and (according to Welch, Adams and Wakefield¹ of the Mayo Clinic) ulcerative colitis. A third example less often recognised is the response of the body to a forced and continuous loss of protein material. Such losses are met with in for example pregnancy, lactation, chronic parenchymatous nephritis and (as is also demonstrated by Welch and his colleagues) ulcerative colitis. In all of these conditions the blood urea tends to be low indicating a small catabolism of amino acids and suggesting that all the available ones are being used for the synthesis of the protein which is being lost: the urea nitrogen in consequence forms very much less than the normal 70–80 per cent. of the total nitrogen leaving the body. Where this happens it is clear that the treatment should include high protein feeding and while the success of a generous protein intake in chronic parenchymatous nephritis is well known and the value of protein in pregnancy and lactation is also accepted the Mayo Clinic workers do well to point out the necessity for a liberal protein diet in ulcerative colitis.

FLUORINE POISONING

MANY of our readers will recall the fog disaster which occurred² in the valley of the Meuse above Liège early in December 1930. Within a few days several thousands persons suffered from an acute pulmonary affection and 60 lost their lives. A commission of inquiry was set up which came to the conclusion that the disaster was due to the accumulation of waste factory products in the air of the narrow steep river valley, a blanket of cold fog during windless weather acting like a closed roof to the valley. The commission suggested that sulphur dioxide (or its derivatives) was the chemical substance responsible. Those who were familiar with the physiological effects of SO₂, and especially those who have experienced considerable or prolonged exposure to this gas were not impressed by the findings of the commission on this head. Dr Kaj Roholm of Copenhagen now surveys³ the whole problem in the light of more recent knowledge about the toxicity of fluorine and its compounds⁴ and makes out a strong case for the belief that fluorine and not sulphur was the peccant agent. Here was a narrow deep valley, a dense pall of almost stationary fog and in two places in the valley (at Engis and in the Sclousin Serrain area) a number of factories (15 in all) throwing considerable quantities of fluorine into the air. It may be unlikely that such a combination of circumstances will arise in this country but the possibility that chronic fluorine poisoning may be occurring cannot be so easily dismissed.

Fluorine poisoning may be produced as a result of industrial processes, from the ingestion of fluorine

¹ Welch, C. H., Adams, M., and Wakefield, F. C. *J. Clin. Invest.* 1935, 14, 161.

² *See Lancet*, 1930, 2, 1203.

³ A paper read before the Danish Society for Internal Medicine, *J. Intern. Med.*, March 1937, 2, 1.

contaminated soil or water, or occasionally (as in Iceland) it may arise from the dust of volcanic eruptions after it has settled on the soil. A number of industrial processes make use of raw materials containing fluorides: (1) Blast furnaces, steel and metal works. Dr Roholm estimates the world's yearly output of calcium fluoride (fluorspar CaF_2) at 200,000–300,000 tons of which 80 per cent is used in blast furnaces. During the smelting of iron and steel, silicon tetrafluoride escapes into the air. (2) Glass and ceramic manufacture. (3) Zinc smelting. Zinc ore usually contains fluorspar. (4) Superphosphate manufacture. Phosphatite contains fluoride. (5) Chemical works. In the neighbourhood of some of the factories in the Meuse valley, it was observed that glass rapidly lost some of its transparency. Plant life was damaged around some of the factories. Animals fed upon contaminated herbage suffered from dental and bone diseases or died with emaciation and cachexia.

In acute fluorine poisoning resulting from breathing contaminated air, the symptoms and signs are those of an acute pulmonary oedema, similar to that seen after exposure to certain "poison gases." In chronic poisoning (whether the "fluorine" is air or water-borne), the characteristic symptoms are mottling of the enamel of the teeth, bony changes, (a) either a diffuse osteo sclerosis with deposits in the ligamentous insertions of the muscles, or (b) bony degeneration and softening (when the poisoning is more severe), general wasting, anaemia and cachexia. Now that attention has been drawn to this matter, no doubt a careful study of the possible risk in our industrial areas will be made. Dr Roholm insists that factories giving off fluorine compounds should be required to take measures for effective removal of the fluorine compounds from chimney smoke.

CAROTID SINUS FAINTING ATTACKS

If medical problems often stimulate physiological research, physiological discoveries often point the way to advances in medicine. The latter sequence is exemplified by the story of the carotid sinus. In the last ten years the physiologists, led by Hering and Heymans, have elucidated the function of this curious bulbous dilatation at the origin of the internal carotid artery, the walls of which, as well as the substance of the adjacent highly vascular carotid body, are furnished with numerous afferent nerve endings. These endings are stimulated by the mechanical stretching of the sinus walls due to the pressure of its contained blood, and also (probably those in the carotid body) by certain chemical changes in the blood, such as carbon dioxide excess, oxygen deficit, and the presence of sodium cyanide in minute amounts. Nerve impulses from the stimulated endings ascend in the vagus and glossopharyngeal nerves to the medulla and give rise to certain well defined reflex effects notably slowing of the heart, splanchnic vasodilatation with fall in blood pressure, and increased breathing. In respect of blood pressure, the carotid sinus mechanism clearly supplements the earlier known depressor reflex from the aortic wall in counteracting excessive rise in aortic pressure and thereby regulating the general blood pressure and the blood supply to the brain. As to respiration, some of the effects formerly attributed to the action on the respiratory centre of changes in the amount or composition of its blood supply are now seen to be brought about by the carotid sinus mechanism.

Soma Weiss and his colleagues have lately looked to the carotid sinus as an explanation of some varieties

of fainting attack in man, and they summarise their observations of the last few years in a recent paper.¹ If the patient's fainting attack can be reproduced at will by digital pressure over his carotid sinus in the neck, they argue that a hypersensitiveness of the reflex is the mechanism of the attack, the conclusion is supported by other evidence as well. They have investigated 57 patients showing this phenomenon, and they remark incidentally that many of them showed local anatomical lesions, such as tuberculous adenitis of glands near the carotid bifurcation, or athero sclerotic lesions in the vessel itself. The induced fainting attacks fall into three groups. In the first a vagal effect predominated, with slowing or transient stoppage of the heart, which could be prevented by atropine. In the second, splanchnic dilatation and fall of blood pressure occurred, indicating a release of sympathetic vasoconstrictor tone as the chief reflex effect, adrenaline counteracted this, while small doses of nitrites accentuated it. In the third group carotid sinus stimulation apparently produced curious faints, with features suggesting amnesia, sleep, or cataplexy, which are more difficult to explain physiologically, since blood pressure and heart rate were unaltered. The authors note that the patients subject to carotid sinus attacks often show evidence of what they call vegetative neuroses—"functional" symptoms such as constant fatigue, mental depression, palpitation, emotional instability. They could offer little evidence, however, that the carotid sinus was responsible for any symptoms other than the fainting attacks and phenomena directly associated with them. In 8 of 10 cases in which the carotid sinuses were surgically denervated, the syncopal attacks ceased but the other features remained unaltered. The authors conclude therefore that they have displayed a reflex physiological mechanism for a symptom hitherto classed as "functional" and often "neurotic," and they wonder how many more disorders of the same class, in the behaviour of the autonomic nervous system, may be amenable to similar explanation.

A SOUTH AFRICAN PROPRIETARY MEDICINES BILL

A Proprietary Medicines and Appliances Bill has been introduced into the South African Parliament which may have far reaching results. It would make it an offence to print, publish, or distribute an advertisement of a proprietary article which is indecent or improper, or fails to state the manufacturer's name and address, or refers to a testimonial, or offers free treatment, or states that the article is a cure for any disease. The Bill goes further indeed, than similar proposed legislation elsewhere, for it would penalise the use in advertisements of the words "professor," "doctor," "physician," or "surgeon." It forbids too any such advertisement which is "likely to conjure up in the mind of a reasonable man the fear of serious consequences from some trivial complaint." Finally, the advertisement must not by name or implication refer to certain diseases scheduled as incurable or requiring special treatment. There is an exception for appliances for deafness or rupture, but the list in the schedule includes alcoholism, appendicitis, blindness, cancer, deafness, diabetes, high blood pressure, infantile paralysis, malaria, pneumonia, sexual impotence, tuberculosis, and venereal diseases. If the Bill were

¹ Ferris E B, Jr, Capps R B, and Weiss S, *Arch. Neurol. Psych.* February 1937, p. 365.

to be passed into law it would of course affect British newspapers introduced into South Africa which contain forbidden advertisements of this kind. Even if it does not become law in its proposed form, the Bill will have offered opportunity for useful discussion and will give newspaper proprietors material for considering the imposition of voluntary standards.

ERADICATION OF TSETSE FROM RIVER AREAS

THE Colonial Development Fund has lately financed an interesting experiment in Kenya. By the expenditure of some £2400 an area of 4000 acres of highly fertile land which had been derelict for thirty years owing to sleeping-sickness has been rendered safe for habitation. An account of the measures adopted has been written by Mr C. B. Symes, medical entomologist and Mr R. T. Vane, tsetse field assistant.¹

The great epidemic of sleeping-sickness which decimated Uganda between 1901 and 1908 spread to the eastern shores of the Victoria Nyansa, and the disease is still endemic on the coast and particularly in the Kaji river basin. Kaniadoto a district in this area was chosen for the experiment because surveys had shown a high incidence of trypanosomiasis. The dense bush along the river and its tributaries is infested with *Glossina palpalis* and the population has been driven to the higher ground which is largely waterless and destitute of trees. These conditions have compelled the people to go down to the streams for water and wood and to water their herds and in doing so they could not avoid contact with the heavily infested bush which varies from 100 yards to a mile in width. The essential feature of the experiment was a piecemeal attack on the bush, the trees are chiefly acacia and thorn but there is a mass of undergrowth and creepers. Five clearings were made varying in width from 500 to 1050 yards at the sites of the most used watering places and fords. When the heavier vegetation had been burned out the undergrowth and creepers were hacked down by gangs of natives. As soon as the five clearings had been made the attack was directed to the blocks of bush which had been left. These were systematically cleared of fly by the use of Swinnerton's screen traps which were most efficient when the fly-density was high. In the later stages great and rapid progress was made by hand catching with nets. The efficiency of these measures may be judged by the fact that in one block nearly 40 000 tsetse were captured. The glossina is big enough to be marked and at different times, some thousands of specimens, rendered identifiable by spots of oil-colour were set free. Their recapture determined how far the clearings were effective and it was noted that few flies managed to cross a cleared area 1000 yards wide. Other interesting details of the habits of the tsetse were also obtained; for example it was found to be more active and more prolific during wet seasons. Among the labour force which comprised an average of 90 natives, 5 cases of trypanosomiasis were recognised but the men were immediately removed and treated and are now well.

The net result of the experiment is that eleven miles of river have been cleared of bush and six square miles of highly fertile land have been rendered available for occupation. In June 1935 400 men

women and children (93 families) were settled on the area, most of which is now under cultivation. Another three square miles have been cleared but will not be safe until an extension has been made. Provided that cultivation is maintained the cost of keeping the cleared area clean will not exceed £75 per annum. A complete scheme for this district would probably require another six to eight years work. Unfortunately the block method is not applicable to the coastal districts and until some measure be devised for dealing with them we cannot expect a return of the prosperous conditions which obtained in this part of the Nyanza province before it was attacked by the trypanosome.

SPEECH THERAPY

FORTUNATELY most of us learn to speak without effort, or at least the effort is not remembered. The vocal apparatus and its use are so complicated however that imperfect speech once acquired is difficult to correct, especially as the patients are most commonly either very young children or over-anxious adults. The mental energy required to study the physiology of speech is greater than most medical students have to spare and as far as doctors are concerned the subject has largely remained a mystery enshrined in very specialised clinics. Two monographs recently issued throw light on different aspects of the work of speech therapy. Miss Parsons writes charmingly.¹ The illustrated story of Mr Tongue's walks to the houses of Mr Soft Palate and Mr Teeth and his meetings with the Diphthong boys provides one example among many of how speech exercises for the young child may be made entertaining. The scientific part of the book is intentionally slight. The book is obviously written by a born teacher and can be recommended not only to doctors who want to know the sort of thing speech therapists do (or could do) but to parents of children with speech defects. Miss McAllister's book² is a more weighty contribution to speech therapy and will arouse more controversy. The two divisions of the book deal with stammering and with stuttering, the terms being used in very wide senses. For example all defects of articulation are classified under the heading stammering even if these arise only on account of defective hearing. The descriptions of such cases suggest some confusion in the author's mind between the intensity and the pitch of sounds, and in respect of other physical factors in the problem. Experienced teachers of the deaf would certainly and rightly object to children with grossly defective hearing being left in a speech therapy clinic instead of being sent to a school for the deaf. Miss McAllister quotes statistics showing that 5.0 per cent of 21 452 children in Dunbartonshire suffer from some kind of speech disability and suggests that the incidence is similar elsewhere. On this account she pleads for a trained speech therapist on the staff of every school with over 400 children believing that occasional attendance at a clinic is unsatisfactory. Another written contribution³ to the popularisation of speech therapy has recently come from Mr H. St. John Ramsey who has corrected himself of stammering and has had 15 years of experience in treating other people. He

¹ The Gateway of Speech. By Freda Parsons. London: Glanville and Co., 1935. Pp. 2. 7s. 6d.

² Clinical Studies in Speech Therapy. By Anne H. McAllister M.A., Ed.D. Lecturer in Speech Training, Jordanhill Training College, Glasgow. London: University of London Press, 1937. Pp. 378. 15s.

³ A Londoner uses and How to Cure It. By H. St. John Ramsey M.A., Speech Therapist and Lecturer in Speech Therapy at Guy's Hospital, London; Frederick Muller Ltd., 1937. Pp. 83. 3s. 6d.

¹ The Eradication of *G. palpalis* from River Area by the "Block" Method. By C. B. Symes and R. T. Vane. Nairobi Government Press, 1937.

discusses the subject clearly and concisely, and his little book is particularly suitable for intelligent adult patients

ENCEPHALITIS IN JAPAN

THERE was an epidemic of encephalitis in Japan in 1873 and another in 1911. The latter was looked on as a cerebro spinal meningitis, and it was not until the epidemic of 1924, in which over 6000 cases were reported, that the true nature of the 1911 outbreak was realised. In 1929 there was a smaller outbreak, with nearly 2000 cases, and the disease was prevalent again in 1935 (5000 cases). Apparently it is more or less endemic in Japan, at any rate in the summer months, especially in certain seaside places. In 1933 a committee was appointed to investigate it, and as head of this committee Inada is now reviewing its work in a French journal.¹ Real progress as regards the aetiology of the disease dates, he says, only from 1933, when Hayashi succeeded in transmitting it to Java monkeys. In the same year besides transmitting encephalitis to monkeys Webster and Fite in the United States succeeded in infecting mice. This opened up wide possibilities, which the committee fully used in the 1935 epidemic. They find that up to the seventh day of disease inoculations of brain matter will usually infect mice. It has also been possible to infect them with blood, either directly inoculated or transmitted through mosquitoes. Cerebro spinal fluid was most infective for mice during the second to fifth days of disease. It was noted that virulence sometimes increased after the third or fourth passage through the mouse. Monkeys, it now appears, are less susceptible than mice, and their susceptibility varies with species and age. The incubation period when human material is directly inoculated into the monkey appears to be about 5-8 days. As regards mode of infection, Inada considers two hypotheses— infection through the nasal mucosa and infection by the bite of an infected mosquito. In weighing these it must not be forgotten that the Japanese epidemic and the St. Louis epidemic—with both of which these observations deal—differed in several ways from the great European epidemics of 1917-26. In particular, the difference in the season at which they occurred has a bearing on the mode of spread. The outbreaks in the European (lethargic) epidemics were almost limited to the colder months, their recurrent peaks were in the second half of the winter, the Japanese and St. Louis outbreaks, on the other hand, were in the summer. The idea that the disease is transmitted through the nose is based on the fact that typical changes have been found in the brain after direct nasal infection of animals, and the finding of the virus in nasal washings, the difficulty of accepting it is the rarity of multiple cases of infection in one household. All the Japanese workers agree that in animals infection by the nose is more often successful than subcutaneous or intracranial injection and indeed is only second to direct cerebral inoculation. Twenty-four hours after nasal injection into the mouse the virus can be obtained from the olfactory lobe and transmitted with it to another animal. Infection by mosquito bites have been unsuccessfully attempted in the United States, but has been achieved in Japan with difficulty and after repeated passages. It seems evident that certain forms of mosquito can harbour the virus, but further observations are necessary before one can decide how far this fact affects mankind.

CHOLINE DERIVATIVES

NOT long ago¹ we referred to the modern tendency to search among substances chemically related to powerful drugs and hormones in the hope of discovering compounds in which a single activity of the parent substance is prominently exhibited, and by way of example we cited the action of carbaminoylcholine on the bladder in certain cases of retention of urine. A valuable account of the effect of this drug on 26 normal persons has since been given by Prof. Starr² of Philadelphia, and includes a record of his own experience after taking a large dose. A similar investigation by Myerson, Loman, and Dameshek³ of Boston has been made for acetyl beta methylcholine (Mecholyl), and a comparison of the effects of the two substances is interesting. They are both parasympathomimetic, acting on the circulatory system, the alimentary tract, bladder, and skin. The effect of mecholyl is prompt, marked, and transient, and includes flushing of the face and chest, perspiration, salivation, rhinorrhœa, lacrymation, fall of blood pressure, and an increased pulse rate which the authors are at a loss to explain. Carbaminoylcholine (Doryl) is slower but more prolonged in its action which is otherwise similar in many respects to that of mecholyl. Prominent among the symptoms to which it gives rise are, however, increased peristalsis and colic, and although flushing and sweating are conspicuous, the effects on pulse and blood pressure are slight. With both drugs atropine annuls unpleasant effects, though animal experiments show that carbaminoylcholine has a stronger "nicotine action" than mecholyl and the consequent stimulation of autonomic ganglia must persist even after atropine. The action of mecholyl on the alimentary tract is slight, but more work is necessary before it can be assumed with confidence that this is the drug of choice for circulatory effects and carbaminoylcholine for visceral activity. The length of time for which the substances act introduces a complicating factor. Thus Kramer⁴ of Philadelphia reports good results in peripheral vascular diseases using mecholyl, but finds difficulty with thrombo angustis obliterans. Starr, on the other hand, records two cases of thrombo angustis obliterans which benefited greatly from carbaminoylcholine, the reason being, apparently, the more prolonged action of this drug. The American investigators seem primarily interested in the relief of peripheral vascular lesions, and their results are on the whole encouraging. They point out the danger of treating patients with a tendency to asthma with choline derivatives, and although atropine is effective in preventing disastrous effects, such patients are not likely to benefit from the more desirable peripheral actions of the drugs.

Summer Time will commence in Great Britain, Ireland, the Channel Islands, and the Isle of Man on Sunday morning next, April 18th, at 2 A.M., when the hands of timepieces should be advanced one hour. It will end on Sunday, Oct. 3rd. Summer time began in France on Saturday, April 3rd, at 11 P.M., and will end there at midnight on Saturday, Oct. 2nd.

¹ *Lancet* Jan. 30th 1937 p. 276

² Starr J. *Amer. J. med. Sci.* March 1937 p. 393.

³ Myerson A., Loman J. and Dameshek W. *ibid.* February 1937 p. 198.

⁴ Kramer D. W. *ibid.* March 1937, p. 405.

¹ Inada R. (1937) *Pr. méd.* 45 99 and 396

PRINCIPLES OF MEDICAL STATISTICS

XVI.—CALCULATION OF THE STANDARD DEVIATION *

In Table III which appeared in the article on the variability of observations and is here reprinted there are given twenty observations of systolic blood pressure of which the mean value was found to be 128. The variability of these observations was measured by means of the standard deviation

TABLE III

(Reprinted from THE LANCET Jan. 23rd 1937 p. 219)

Twenty observations of systolic blood pressure.	Deviation of each observation from the mean (mean = 128)	Square of each deviation from the mean.
(1)	(2)	(3)
98	-30	900
100	-28	784
136	+8	64
108	+10	100
130	+2	4
114	-14	196
125	-3	9
134	+6	36
128	0	0
107	-21	441
123	-5	25
135	+7	49
109	+1	1
132	+4	16
104	-20	400
115	-13	169
120	-8	64
132	+4	16
130	+2	4
Sum 2600	0	3674

This value was calculated by (1) finding by how much each observation differed from the mean (2) squaring each of those differences (3) adding up these squares and finding their mean by dividing by the number of observations (4) taking the square root of this number. Putting this in symbols if the number of observations is n each observation is designated by x and the mean of them by $\bar{x}$ then the standard deviation equals

$$\sqrt{\frac{\text{Sum of values of } (x - \bar{x})^2}{n}}$$

This method of calculation would have been much more laborious if the mean blood pressure had not been a whole number—e.g. if it had been 128.4—and if each of the original observations had been taken to one decimal place—e.g. the first had been 98.7. The differences between the observations and their mean and the squares of these values would then have been less simple to calculate. But in such cases the necessary arithmetic can still be kept simple by a slight change of method.

The Ungrouped Series

Instead of measuring the differences between the observations and their mean we can first take those differences from some other point any point which makes the calculation simpler and make a correction at the end for having done so. For instance taking the figures of Table III instead of calculating the differences between the observations and their mean

In accordance with many requests I am adding to this series of which the main argument was concluded in THE LANCET of last week two additional articles on the calculation of (1) the standard deviation and (2) the correlation coefficient. The latter will appear next week.

value 128 let us measure the differences between the observations and 100. These differences are given in column (2) of Table III A and their squares in column (3). The sum of the squared deviations from 100 is 19354 and the mean squared difference is therefore $19354 \div 20 = 967.7$. To this value we must now make a correction for having measured the deviations from 100 instead of from the mean of 128. The correction is to subtract from this mean square value of 967.7 the square of the distance between the value from which we chose to measure the deviations (100 in this case) and the value from which we ought to have measured them (128). Thus we have 967.7 minus $(128-100)^2$ or $(28)^2 = 784$ which gives 183.7. The standard deviation is then $\sqrt{183.7} = 13.56$ the value we reached before by taking the deviations from the mean itself.

TABLE III A

Calculation of Standard Deviation Ungrouped Series

Twenty observations of systolic blood pressure.	Deviation of each observation from 100	(Deviation) ²	Square of observation
(1)	(2)	(3)	(4)
98	-2	4	9604
100	+0	0	10000
136	+36	1296	18496
108	+8	64	11664
130	+30	900	16900
114	+14	196	12996
125	+25	625	15625
134	+34	1156	17956
128	+28	784	16384
107	-7	49	11449
123	+23	529	15129
135	+35	1225	18225
109	+9	81	11881
132	+32	1024	17424
104	-4	16	10816
115	+15	225	13225
120	+20	400	14400
132	+32	1024	17424
130	+30	900	16900
Sum 2560	—	19354	331354

If the observations all lie near one hundred this is a convenient method of working for the deviations are thus reduced to a size which is easy to handle and the squares can often be done in one's head. On the other hand one has to make subtractions from 100 to obtain the deviations. Even this step can be eliminated by measuring the deviations of the observations from zero—i.e. by squaring the observations themselves as is done in column (4). The squares can be taken from a book of tables (e.g. Barlow's Tables of Squares Cubes Square Roots &c. London E. and F. Spon 1930 7s. 6d.).

This obviates finding any deviations at all.

The sum of these squares is 331354 and the mean square is $331354 \div 20 = 16567.7$. In using the squares of the observations themselves we have measured their deviations from 0 instead of from the mean value of 128. Therefore the distance between the value from which we chose to measure the deviations and the value from which we ought to have measured them is 128. As correction we must then subtract $(128)^2$ from our mean square value. This gives 16567.7 minus $16384 = 183.7$ and the standard deviation is $\sqrt{183.7} = 13.56$ as before. To calculate the standard deviation in a short ungrouped series of figures the procedure is then as follows: (1) find the mean of the observations (2) square each

observation, (3) sum these squares and find their mean, (4) from this mean square subtract the square of the mean, (5) the square root of this last value is the standard deviation

The standard deviation therefore equals —

$$\sqrt{\frac{\text{sum of squares of observations}}{\text{number of observations}} - (\text{mean of observations})^2}$$

or in symbols is $\sqrt{\frac{\text{sum of } (x)^2}{n} - (\bar{x})^2}$

(The proof of the correction is quite simple but the worker who wishes to apply the method has no need to worry about it)

The Grouped Series

With a large number of observations this method of squaring each observation would be very laborious. A shorter method which will give very nearly the same result can be adopted. The observations must first be grouped in a frequency distribution. As an example we may take the distribution given in Table II (see *Lancet*, Jan 23rd, p 219) of the ages at death from diseases of the Fallopian tube. This distribution is given again in column (2) of Table III B.

TABLE III B

Calculation of Standard Deviation Grouped Series

Age in years	Number of deaths in each age group	Age in working units	(2) × (3)	(3) × (4)
(1)	(2)	(3)	(4)	(5)
0—	1	-5	-5	36
5—	—	-5	—	—
10—	1	-4	-4	16
15—	7	-3	-21	63
20—	12	-2	-24	48
25—	35	-1	-35	35
30—	42	0	—	—
35—	33	+1	+33	33
40—	24	+2	+48	96
45—	27	+3	+81	243
50—	10	+4	+40	160
55—	6	+5	+30	150
60—	5	+6	+30	180
65—	1	+7	+7	49
70-75	2	+8	+16	128
Total	206	—	+195	1237

To reach the mean age at death we could add up the 206 individually recorded ages and divide by 206. But at the risk of making only an immaterial error we can shorten this process by presuming that the individuals belonging to each 5 yearly age group died at the centre age of that group—e.g., that the 42 women dying at ages between 30 and 35 all died at age 32.5. Some will have died between 30 and 32.5, some, perhaps, at exactly 32.5, some between 32.5 and 35. If the distribution is fairly symmetrical, then the positive and negative errors we make by this assumption will nearly balance out. The sum of the 206 ages at death will then be $(25 \times 1) + (12.5 \times 1) + (17.5 \times 7) + (22.5 \times 12) + (27.5 \times 35) + (32.5 \times 42) + (37.5 \times 33) + (42.5 \times 24) + (47.5 \times 27) + (52.5 \times 10) + (57.5 \times 6) + (62.5 \times 5) + (67.5 \times 1) + (72.5 \times 2) = 7670.0$ and the mean age at death is $7670.0 \div 206 = 37.2$ years. Having found the mean in this way the standard deviation could be found by calculating how much the observations in each group deviate from it and taking the square of this value. For instance the 12 individuals in the age group 20-25 died on our assumption at age 22.5. They differ from the mean, therefore by 14.7 (37.2 minus 22.5), the square of which is 216.09 , and this value we must take 12 times as there are 12 individuals with that deviation.

Following this procedure we should reach for the squares of the deviations of the individuals from their mean the following values —

$$\begin{aligned} &(-34.7)^2 \times 1 + (-24.7)^2 \times 1 + (-19.7)^2 \times 7 + \\ &(-14.7)^2 \times 12 + (-9.7)^2 \times 35 + (-4.7)^2 \times 42 + \\ &(0.3)^2 \times 33 + (5.3)^2 \times 24 + (10.3)^2 \times 27 + \\ &(15.3)^2 \times 10 + (20.3)^2 \times 6 + (25.3)^2 \times 5 + \\ &(30.3)^2 \times 1 + (35.3)^2 \times 2 = 26,310.54 \end{aligned}$$

The standard deviation is, therefore,

$$\sqrt{26,310.54/206} = \sqrt{127.72} = 11.30$$

SHORT METHOD, WITH GROUPED SERIES

This is a possible method of working but, it will be observed, a somewhat laborious way. In practice a much shorter method is adopted. The principle of this method is that instead of working in the real, and cumbersome, units of measurement we translate them arbitrarily into smaller and more convenient units, work the sums in those smaller units, and translate the results back again into the real units at the end.

Let us, for instance, replace 32.5 by 0, 27.5 by -1, 22.5 by -2 and so on, 37.5 by +1, 42.5 by +2, and so on. (The original groups must be of equal size, they were all 5 yearly in our example.) Now instead of having to multiply 27.5 by 35, for example, we have the simpler task of multiplying -1 by 35. These multiplications are made in column (4) of Table III B. Their sum, taking the sign into account (as must be done), is +195. The mean in these units is, therefore,

$$+195/206 = +0.947$$

The standard deviation can be found in these same small units, measuring the deviations of the observations from the 0 value instead of from the mean for simplicity. The squares of the deviations in these units are merely 1, 4, 9, 16, &c., and these have to be multiplied by the number of individuals with the particular deviation—e.g., 7×9 for the -3 group, 24×4 for the +2 group and so forth. A simpler process still of reaching the same result is to multiply column (4) by column (3), (instead of multiplying 7 by 9 we multiply (7×-3) by -3). This gives the figures of column (5). The sum of these squared deviations is, then, 1237 and their mean is $1237/206 = 6.0049$.

These deviations in working units have been measured round the 0 value, whereas they ought to have been measured round the mean (in working units) of +0.947. The correction as stated before, is to subtract the square of the distance between the value round which the deviations ought to have been measured and the value round which they were in fact measured, in this case the distance is $0 - 0.947 = -0.947$. The standard deviation in working units is therefore $\sqrt{6.0049 - (-0.947)^2} = 2.26$.

We have now to translate the mean, +0.947, and the standard deviation, 2.26, back into the real units. This is simply done. The mean in working units is +0.947—i.e., 0.947 working units above our 0. In real units our 0 is equivalent to 32.5, for that is the substitution we made (note, the centre of the group against which we placed the 0, not its beginning—a mistake which is somewhat easy to make). The real mean must therefore be $32.5 + 5(0.947) = 37.2$ —which is the same as the value we found by the long method using real units throughout.

The multiplier 5 is arrived at thus: the mean is found to be 0.947 above the 0 value when the groups differ in their distances from one another's centres by units—e.g. from -1 to -2—but in the real distribution their distance from one another's centres is 5—e.g., from 27.5 to 22.5—therefore the mean in real units must be 5 times 0.947 above 32.5 (if the mean in working units had been

+1 clearly the real mean would be 37.5 for the latter is the value for which +1 was the substitute—i.e. $32.5 + 5 (1)$

The rule then is this: Having found the mean in working units multiply its value by the original unit of grouping (4, 5, 10 or whatever it may be) and add the resulting figure (or subtract it according to its sign) to the value of the centre of the group against which the 0 was originally placed. That gives the real mean value. To reach the real standard deviation all that has to be done is to multiply the standard deviation as found in working units by the original units of grouping—in this case by 5. For if this measure of the scatter of the observations is 2.26 when the range is only 14 units (from -8 to +8) it must be 5 times as much when the range is really 70 units (from 2.5 to 72.5). The real standard deviation is therefore $5 \times 2.26 = 11.30$

CHECKING THE ARITHMETIC

As regards the final result it is immaterial where the 0 is placed: the same answers in real units must be reached. From the point of view of the arithmetic it is best to place it centrally so that the multipliers may be kept small. For the sake of demonstration the calculations for Table III b are repeated in Table III c taking another position for 0. This in practice is a good method of checking the arithmetic.

TABLE III c

Calculation of Standard Deviation Grouped Series

Age in years	Number of deaths in each age-group	Age in working units	(2) × (3)	(4) × (5)
(2)	(1)	(3)	(4)	(5)
0-	1	-8	-8	64
5-	—	-7	—	36
10-	1	-6	-6	36
15-	7	-5	-35	175
20-	12	-4	-48	192
25-	35	-3	-105	315
30-	42	-2	-84	168
35-	33	-1	-33	33
40-	1	0	—	0
45-	27	+1	+27	81
50-	10	+2	+20	40
55-	6	+3	+18	36
60-	—	+4	—	—
65-	1	+5	+5	25
70-75	—	+6	+12	72
Total	200	—	-217	181

From the calculations in Table III c we have
Mean in working units = $-217/200 = -1.053$
mean in real units = $42.5 - 5 (1.053) = 37.2$
(42.5 is the centre of the group against which the 0 was placed: note that the correction has now to be subtracted for the sign of the mean in working units is negative)

Mean squared deviation in working units round 0 = $1281/200 = 6.405$

standard deviation in working units is

$$\sqrt{6.405} = (1.053) = 2.26$$

(1.053 is the distance between the value of 0 from which we measured the deviations and the value from which we ought to have measured them: note that the correction is subtracted whatever the sign of the mean in working units)

the real standard deviation is $2.26 \times 5 = 11.30$
These values agree with those previously found

The Standard Deviation in Small Samples

It finally may be noted that the standard deviation found for a set of observations is an estimate of the variability of the observations in the population

or universe that has been sampled. A slightly better estimate is reached by dividing the sum of the squared deviations from the mean by $n-1$ instead of by n (where n is the number of observations). If the number of observations is large the difference is immaterial: if it is small some difference results. A simple method of making this change is to calculate the standard deviation in the way just described

and multiply the result by $\sqrt{\frac{n}{n-1}}$ e.g. the standard deviation of the 20 observations of blood pressure in Table III would be $13.55 \times \sqrt{\frac{20}{19}} = 13.90$. This correction should be applied if the number of observations is less than about 30 especially if tests of significance are to be applied.

A B H

THE FIGHT AGAINST LEPROSY

THE fourfold objective of the British Empire Leprosy Relief Association was outlined by Dr Ernest Muir its medical secretary at the annual meeting held at the India Office on April 15th. The Association is concerned with the study of leprosy and of the conditions under which it exists and spreads. It endeavours also to help the leper by care, treatment and training; to combating leprosy with a view to its final control and to interest, rouse and educate the British public in the problem of leprosy. Dr Muir said that since the inception of the Association 13 years ago a much more accurate idea had been obtained of the widespread distribution of leprosy and of the various factors which govern its incidence. Study of the disease itself had shown that while most lepers are not infectious a few highly infectious cases can spread the disease to many others and thus one generation infects the next. Those infected in childhood furnish most of the serious infectious cases. As to treatment it was now recognised that though medicines are of value the main remedy lies in healthy occupation and sound nutrition. Compulsory segregation and treatment were generally worse than useless. The leper must be led not driven; without his co-operation neither effective treatment nor limitation of the infection could be secured. Segregation by itself would never do more than touch the fringe of leprosy control—at least in poor and densely populated countries but well equipped and staffed settlements could be used as centres for an educative campaign and indeed their chief function should be to act as a centre of training and enlightenment in the district.

The annual report of the Association emphasises the fact that leprosy is a problem of colonial development. At present two types of leper institution are to be found: one is a refuge where patients are concentrated while infectious cases, not recognised as such, mix freely with the community. The other progressive type is that to which cheerful and energetic lepers are attracted mainly by the hope of recovery. It is to the organisation and multiplication of this latter type of settlement that the Association is devoting its energies and as well as to the education of all people in the nature of leprosy and the means of its prevention. Sir William Peel has succeeded Sir Edward Galt as chairman of the executive committee of the Association. He made an urgent plea for more support from the British public for the maintenance and extension of its activities.

SPECIAL ARTICLES

TREND OF THE POPULATION OF
ENGLAND AND WALES
DURING THE NEXT HUNDRED YEARS

By C A GOULD, M.C., B.Sc.

ASSISTANT IN THE STATISTICAL SECTION OF THE PUBLIC HEALTH
DEPARTMENT LONDON COUNTY COUNCIL *

For some time before the late war—in fact after the year 1870—and to a greater extent since, there has been in this country a steady drop in the fertility-rate coupled with a gradual lowering of the death rate. As a result of these two movements the population of England and Wales is rapidly ageing. To ascertain the effect of this tendency on the future age distribution of the population I have assumed in these notes that for the next hundred years the fertility rate remains at the 1933 level, and that the mortality rates are as obtaining in 1931. The 1931 census population being taken as basis, successive male and female populations at the various ages were estimated for each future census by means of the 1931 life table, assuming the 1933 fertility rates by age groups of all women (15–45) to persist and the ratio of male to female births to be 1.050.

The results are set out below. Table I gives the estimated population by age and sex at each future census up to and including the year 2031, expressed as a percentage of the corresponding population at the 1931 census, while Table II shows the percentage age distribution of the male and female populations at each future census for the next hundred years. The various changes in age distribution of the total population and in the magnitude of each age group can be conveniently analysed for each sex in the following categories: infants (0–5), children of school ages (5–15), young adult and early middle age workers (15–45), middle age workers (45–65), and pensioners (65+).

TABLE I

Estimated population by age groups at each census date during the next hundred years expressed as a percentage of the corresponding age group population in 1931

MALES

Age	1931	1941	1951	1961	1971	1981	1991	2001	2011	2021	2031
0–5	100	90	85	75	68	62	56	50	46	42	38
5–15	100	85	79	74	65	59	54	48	44	40	36
15–45	100	105	100+	91	82	75	68	62	56	51	46
45–65	100	106	110	128	129	116	103	96	86	77	71
65+	100	127	145	151	170	186	184	162	147	136	122
All ages	100	102	102	99	94	87	80	72	65	59	54

FEMALES

0–5	100	90	84	75	67	61	55	50	47	41	37
5–15	100	85	79	73	65	58	54	48	43	40	36
15–45	100	100	92	82	74	68	61	55	50	46	41
45–65	100	111	120	120	121	105	94	67	79	70	64
65+	100	126	152	168	182	190	180	158	142	130	117
All ages	100	101	101	97	91	84	76	65	63	57	51

(1) *Infants* (0–5)—This group comprised 8 per cent of the whole population as regards males and 7 per cent

* The opinions and conclusions expressed herein are my own and the London County Council accepts no responsibility for them.

as regards females in 1931. In the year 2031 these percentages will each have dropped to 5. Also by this time the number of males of this group will have steadily fallen to 38 per cent of their number in 1931 while the females will be reduced to 37 per cent.

(2) *School-children* (5–15)—In 1931 the males of this group will comprise 12 per cent of the total male population and the females 11 per cent of the female population as compared with 17 per cent and 16 per cent respectively in 1931. Again the males and females of this group will, as in the group above, steadily decrease in numbers during the period, in the year 2031 each will be only 36 per cent of the 1931 population of this group.

(3) *Young adults and early middle-aged* (15–45)—In 1931 this group formed 47 per cent of the total population for each sex, in the year 2031, however, the males will be reduced to 40 per cent and the females to 38 per cent. Moreover, the males will by then have fallen to 40 per cent and the females to 41 per cent of their numbers respectively in 1931.

(4) *The middle-aged* (45–65)—The percentage of total population formed by this group will increase during the next hundred years from 21 to 28 for males and from 22 to 28 for females. In the year 2031, however, the males will be reduced to 71 per cent and the females to 64 per cent of their numbers respectively in 1931, the census maximum of 129 per cent for males being reached about 1971 and that of 126 per cent for females in 1961, some ten years earlier.

TABLE II

Percentage age-distribution of male and female populations at each census during the next hundred years

Census	Age	0–5	5–15	15–45	45–65	65+	All ages
1931	M	8	17	47	21	7	100
	F	7	16	47	22	8	100
1941	M	7	14	49	22	8	100
	F	6	13	47	24	10	100
1951	M	7	13	46	24	10	100
	F	6	12	41	26	12	100
1961	M	6	13	43	28	10	100
	F	5	12	40	29	14	100
1971	M	6	12	41	29	12	100
	F	5	11	39	29	16	100
1981	M	6	12	40	28	14	100
	F	5	11	38	28	18	100
1991	M	6	12	40	27	15	100
	F	5	11	38	27	19	100
2001	M	5	12	40	28	15	100
	F	5	12	40	23	20	100
2011	M	5	12	40	28	15	100
	F	5	11	38	28	18	100
2021	M	5	12	40	29	15	100
	F	5	11	38	27	19	100
2031	M	5	12	40	28	15	100
	F	5	11	38	28	18	100

(5) *Pensioners* (65+)—Male pensioners will increase from 7 per cent to 15 per cent of the total male population during the next hundred years, while the females will increase from 8 per cent to 18 per cent. The numbers of both sexes will also rise rapidly until the year 1951, when the males will be 186 per cent and the females 190 per cent of their respective numbers in 1931. By the year 2031, however, these percentages will have dropped to 122 and 117 respectively.

The maximum total population, 19,600,000 males and 21,200,000 females, will be attained about the year 1944 and at the end of a hundred years the total population will be only about half of that in 1931—namely, 10,280,000 males and 10,650,000 females approximately.

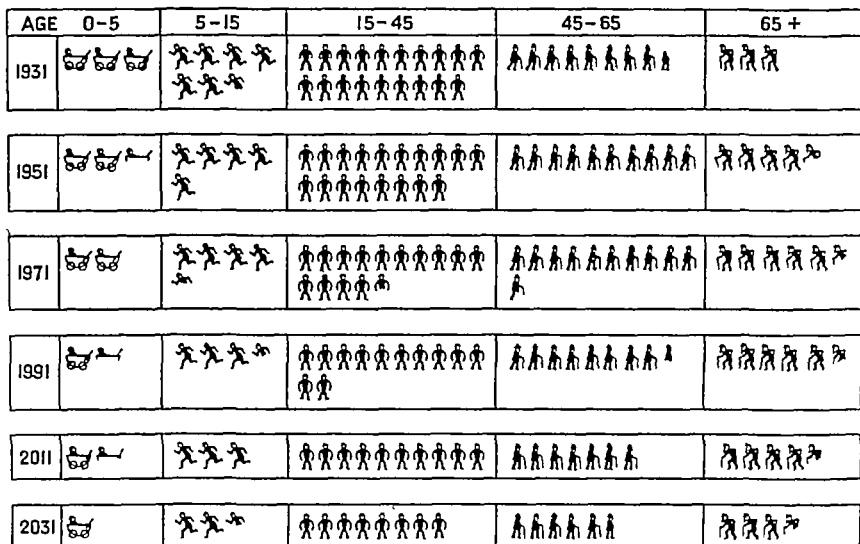


Diagram showing the population of England and Wales at twenty year intervals during the next century. The calculations are based on the assumption that the fertility rate is the same as in 1933 and the mortality rate the same as in 1931. Each homonculus represents one million persons.

The effect of these changes in the number and age distribution of the population will be far reaching. The reduction in the number of females of the child bearing ages (15-45) will mean fewer babies and eventually fewer school-children; this in turn may lead to fewer schools and teachers in the years to come. Moreover any further lowering of the fertility rate coupled with a drop in the number of potential mothers and fathers would cause a still further reduction in the number of births.

As the older generations die off the fall in the number of young adults of both sexes will cause a dearth of employees and potential purchasers of food and commodities. Trade will consequently suffer on the other hand wages will tend to increase. Another serious aspect is the financial effect of an increasing pensioner group (age 65+) coupled with a decreasing contributor group (aged 15-65) on annuity and pension funds. One thing is certain—namely that in future the annual pension will be much greater for example at the end of the period it will be more than twice the cost in 1931.

The flow of population to the large towns has gradually drained the countryside of its workers and the steady decrease in population in the future will accentuate this depopulation of the rural districts more than ever. Unless a determined move is soon made to repopulate country districts our supply of home-grown food already inadequate to feed the nation will tend to disappear. It may also be asked how we are going to maintain our fighting forces with a regular supply of recruits and man our merchant service with seamen in the future in view of the certainty of a steady fall in the number of young male adults. These problems will force themselves on the attention of our politicians before many years

are past one of them—that of defence—is already causing anxiety.

In this investigation the possible effects of migration have been ignored since it is obviously impossible to attempt to forecast the extent of emigration that may take place from this country in the coming years. There will doubtless be determined efforts in the near future to increase the outward flow of population to various parts of the Empire especially of young adults and children. This of course will add to the increasing high proportion of persons over 45. It is unlikely that fertility rates will fall much lower—there are already signs of a slight upward tendency—and it is doubtful whether there will be a much further reduction in the general death rate in view of the steady increase in the percentage of total population in the older age groups amongst which the majority of deaths occur. Should however an improvement in fertility take place in the future this will be largely counteracted for some years to come by the increase in the death rate. We can therefore assume that apart from the effects of future migration the above estimates give a reasonably accurate forecast of the trend of the population of England and Wales during the next century unless significant changes in fertility and mortality rates occur during the period.

CHELMSFORD NEW HEALTH CENTRE—The mayor of Chelmsford has opened a new public health department where clinics will be held and the staff of the borough medical officer housed. There is a health visitors room a treatment department in which minor ailments are dealt with a dark room a consultation room a dental department and a recovery room. The cost has been £5000.

MANCHESTER MEDICAL LIBRARY

THE question of increased accommodation for the storage of books and of improved facilities for their easy use is a problem almost as pressing to medical schools as is that of more laboratory and lecture room accommodation. Manchester University is recognising this in its present appeal for money and in its plans for the future. Its medical library to which, in addition to its own staff and students, the members of the Manchester Medical Society have access, and which is to a considerable degree supported by the latter, is housed in the university medical school. But the present accommodation is by no means all that could be desired. Harvey Cushing, himself an eminent authority on medical books, has described the library as one of the best he had seen but as one of the worst housed. The acids of the Manchester atmosphere, some of them perhaps from the university's own chemical laboratories, assisted by the fumes of the gas with which the rooms were for many years lighted, have played havoc with the bindings. Space too is deficient, both for qualified readers and for the students who are using the library in increasing numbers and who would use it still more if elbow room and comfort were improved. The fact that the students' reading room acts as a passage for access to the general room and committee room tells its own tale. A lecture theatre is also urgently required.

The library, which claims to be the largest medical library in England outside London, contains some 75,000 bound volumes as well as many thousands of pamphlets which are only now in process of being sorted and catalogued. One of the avowed objects of the Manchester Medical Society when it was founded in 1834 was "to establish a medical library and reading room." For many years its progress, at first in a private house in Faulkner street, then in the Royal Institution (which is now the City Art Gallery) was slow. In 1875 an arrangement was arrived at by which Owens College housed the books in its newly built medical school at the back of the Oxford road buildings, and provided the medical society with headquarters. The college gave a grant to help in maintenance and as this grant was augmented it obtained increasing rights for its staff and students. As the library grew the society found it more and more difficult to maintain its standard of efficiency, until in 1930 it was handed over to the university, the members of the society retaining their right to the use of the books and accommodation. As the gift implied that the society could not now break away taking the books with it, it became worth while for the university to develop the library and to spend money in housing it properly. The university has allotted a site for it conveniently close to the medical school.

The library, as it stands, is largely the result of the work of Dr Thomas Windsor (1831-1910), a bibliophile of bibliophiles. Valuable collections have been given, one by Dr Samuel Crompton, another by Dr Charles Clay of ovariotomy fame, others by the Royal Infirmary and the Manchester St Mary's Hospitals. Many rare books are to be found on the shelves. Among the menubula are an Italian copy of "Guv de Chauliac" (1480). Other early books are a 'Herbal or Boke of the Properties of Herbes' (1548), of which no other example is known, and a copy of Wolveridge's "Speculum Matris or The Expert Midwives Handmaid" (1671) which is very rare. The library possesses

also a presentation copy of Beaumont's work on Alexis St Martin, and two copies of Parkinson's "Shaking Palsy," both rare works. Apart from books there is John Hunter's grandfather clock, his dinner bell, and the seal of his diploma as Fellow of the Royal College of Surgeons in Ireland, all of which were acquired from the family of Sir Richard Owen, to whom they came through his marriage with the daughter of William Clift who assisted Hunter.

In part owing to want of space in the main library rooms, and in part for convenience, a system of departmental libraries—physiology, anatomy, pharmacology, gynaecology, cancer, public health, and dentistry—has been inaugurated, these hold all the books on their own subjects and facilitate study though they create difficulties of control. Another special section is given up to local medical history—of Manchester in particular, but also of Lancashire and Cheshire in general—which contains some 1100 volumes and 230 boxes of unbound material.

PARIS

(FROM OUR OWN CORRESPONDENT)

THE HAWKING OF DRUGS

LAST year a new law regulating the sale of drugs came into force in France. This law was the inevitable reaction to the self prescribed pharmacological orgies in which the country has indulged with ever growing zest. The law strikes at the sale of drugs outside the chemist's shop which, if the chemist himself is on duty, is supposed to serve, if not as an absolutely fool proof safety valve, at least as a check on the public's ardently misguided search for health in a bottle. The new law also attempts to put a spoke into the wheel of the circularising "herborist" who, through the post and persuasive touts, offers Nature's cures without discrimination. A recent number of the *Siccle Médical* reports an important judgment of the *tribunal correctionnel* of Nancy. In this town a certain doctor of pharmacy was prosecuted for the sale of drugs under conditions infringing the law of Sept 4th, 1936. On the first occasion he was acquitted by the tribunal which found that he had acted in good faith. Regarding this judgment as an incentive he employed nine motor lorries on regular circuits of neighbouring villages, collecting orders and distributing goods already ordered. These lorries were in effect chemist's shops on wheels without a duly qualified chemist to put on the brake. The leniency shown by the tribunal on the first occasion was not repeated, and the chemist was fined 300 francs and ordered to pay 10,000 francs damages to the *Syndicat des pharmaciens de Lorraine*. The judgment in this case should prove an obstacle to the sale and delivery of pharmacological preparations at the customer's door as though they were the daily necessities of life.

THE FUTURE OF NURSING IN THE AIR

Dr P. Bichague, who is "vice président délégué" of the Comité Central d'Aviation Sanitaire, and who has done much to organise a network of first aid posts on the French main roads, is not a little concerned about the future of nursing in the air. During the past two years more than 200 French nurses have passed all the tests required of them for air ambulance service, and now they find there is little scope for their activities in this sphere. From a national

point of view their sacrifices in time and money and energy have certainly not been wasted for these enterprising young women have set an excellent example to their brothers and other members of the *séxe faible*. The authorities are not to be blamed unreservedly for having encouraged young nurses to qualify for duties of a hypothetical character and it was made plain enough from the outset that the emergencies in which air nurses might be called to serve might never materialise. But the fact remains that these nurses have found no immediate return for a relatively costly investment. Dr Béhague is inclined to think that there has been a certain fundamental misconception about first aid in the air. As he points out both peace time and war time emergencies may make calls on air ambulance space so great that it will often be given to two patients rather than to one patient plus a nurse. If nursing is required in a particularly important case this can be given by a doctor. His advice to would be first aid workers in the air is in effect that they first learn to fly and that they then master whatever may be required of them as first-aid attendants. Merely to qualify as an air nurse and not as a pilot is to risk being left behind on the ground in an emergency. Experience with first aid on the highways has convinced Dr Béhague that the most satisfactory arrangement is to teach the men in charge of first aid posts on the roads the elements of first aid which can thus be given far more promptly than were the injured to be cared for by skilled first-aid workers rushed up from some distant centre. And in this connexion he compares the man on a highway present at the time of an accident with the pilot who has learnt not only to fly but also to nurse.

It is probable that the majority of Dr Béhague's 200 nurses have followed a course of a few hours in first aid or at most have completed a nursing course of only a few months and the guess may be ventured that few possess the official nursing diploma. It is not surprising therefore that these 200 have been unable to find employment in a country where the State regulates the training of nurses and has created a State diploma.

COMPULSORY ANTI TYPHOID AND ANTI DIPHTHERIA VACCINATION FOR MEDICAL STUDENTS

It will be remembered that last summer the attention of the French Academy of Medicine was drawn to the high diphtheria rate among medical students and the need for protecting them against it by artificial immunisation. Dr Clément's advocacy of this measure was supported by no less an authority than Dr Rouvillois who went one better by advocating triple associated vaccination of medical students against typhoid, diphtheria and tetanus. The commission created by the Academy was remarkably strong and representative and its rapporteur was Prof Tanon. When it met in February of this year it decided that compulsory vaccination against tetanus might be dispensed with considering how rare this disease is in medical students. On the other hand it was agreed that associated vaccination against typhoid and diphtheria should be recommended as a compulsory measure early in the medical curriculum and without recourse to the Schick test. The Academy of Medicine has now adopted the findings of its commission and the next step will presumably be their presentation to the Ministers of Public Health and National Education.

NOTIFICATIONS OF THE CAUSES OF DEATH

The inability or unwillingness of many doctors to state in writing why some of their patients died

has for many years been a thorn in the flesh of the public health authorities. In 1927 there were as many as 70 000 deaths whose cause was not accurately specified in the death certificates. In 1933 this figure rose to 118 000 or 17 per cent of all the deaths recorded in this year. Since Jan 1st 1929 a more or less concerted effort has been made by five departments or counties to reform matters in this respect and the departmental inspectors of hygiene have co-operated with medical practitioners so effectively that the proportion of deaths from unknown causes has been reduced to less than 5 per cent. The principles on which this reform has been based are now to be introduced in all the other departments in France as from July 1st 1937. In the past vagueness in the wording of death certificates has often reflected a doctor's sense of obligation to professional secrecy and it is to ease his conscience in this respect that in the future death certificates will be so drafted that the part showing the cause of death will be detached from the part on which the name of the dead person is inscribed. There will also be such a speeding up of the passage of the death certificate to its final destination that if it is faultily worded it can promptly be referred back to its author.

IRELAND

(FROM OUR OWN CORRESPONDENT)

A REVIEW OF THE YEAR

THE introduction of the estimate for the Department of Local Government and Public Health by the Minister gave an opportunity in the Dáil last week for a general discussion of questions of public health. The total grant asked for was £1,269 008 which included a sum of £769 432 for housing and £327 006 for social services. The Minister stated that the administration of public health was now supervised in every county by a county medical officer of health. Throughout the country the organisation of public health measures was being gradually perfected and further improvements in the public health might be hoped for. The vital statistics for 1935—the latest available—showed a slight rise in both birth rate and death rate. The former had increased from 19.49 per 1000 in 1934 to 20.01 in 1935 and the latter from 13.15 to 13.08. The increase in the death rate was largely due to a high incidence of the principal infectious diseases which were more numerous than in 1934 being 1865 as compared with 1369. Three cases of typhus fever were recorded the lowest number in the history of the country. The incidence of diphtheria had diminished the decrease being greatest in those areas where the most intensive immunising campaigns had been carried out. There had been heavy mortality from measles during the year the number of deaths being 316 whereas they were 50 in the previous year. Infant mortality shared in the general increase of the death rate being 68 per 1000 births as compared with 63 in the previous year. The greater mortality among infants was chiefly due to congenital defects and to outbreaks of diarrhoea and enteritis. The Minister hoped that the carrying into effect of the regulations made in pursuance of the Milk and Dairies Act 1935 would go a long way to reduce the incidence of these diseases. The infant mortality was highest in the urban areas. In Waterford it was 126 per 1000 birth in Kilkenny 110 in Limerick 106 and in Wexford 107. The rate in Dublin had risen from 80 in 1934 to 91 in 1935. Valuable work for the safeguarding of

infant life was being carried out under approved maternity and child welfare schemes in many of the urban areas and in a few counties. Approved schemes for the supply of free milk to poor children had been in operation in all areas except two urban districts in which the local authorities declined to avail themselves of the amounts of money allocated. School medical inspection was now carried out in every county, and was associated with medical and surgical treatment for certain defects. School meals were now supplied by 51 local authorities, the number of meals supplied in 1936 being approximately 4,231,872.

There was an increase in the number of deaths from tuberculosis from 3520 to 3770, the death rate being much higher in the urban than in the rural areas. There had been a grant from the Hospitals Sweepstakes Fund of £10,000 toward medical research, and a council to administer the Fund had been appointed. A sum of £10,000 had also been allocated for the establishment of a hospital library service. The Minister dealt at length with what had been done in regard to housing. The total number of houses built since 1932 would appear to be 14,895 in urban areas and 8662 in rural areas.

SITUATION OF THE HOSPITALS

In the subsequent discussion the Minister was questioned as to his intentions in regard to the development of the hospital system of the country, and specially with reference to the Dublin hospitals. Dr Rowlette (Dublin University) drew attention to the report of the Hospitals Commission which had been in the Minister's hands for some 18 months. The report had recommended a certain line of development of the Dublin voluntary hospitals but the Minister's decision had not yet been given. The hospitals concerned were at a standstill through not knowing what their future was to be. At the same time the pressure on their bed accommodation was steadily increasing. Not only was the population of Dublin growing rapidly but the desire and need for hospital treatment in preference to home treatment were also growing, and would continue to grow. He emphasised that the Sweepstakes were organised by those interested in the voluntary hospitals for the aid of the voluntary hospitals, and the voluntary hospitals had a primary claim on the Sweepstakes Funds.

Thus contention was admitted in his reply by the Minister. He agreed that the voluntary hospitals "had, ethically and in all justice, a right to primary consideration when distributing the Hospitals Sweepstakes Funds." He declared also that it was not his intention to spend on the hospitals of local authorities more than one third of the net amount received out of the Hospitals Sweepstakes Funds for hospitals.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Lt Comdr D R F Bertram to *St Angelo* for R N Hospital Malta.
Surg Lts C J Roberts to *Halcyon* and F Bush to *Pembroke* for R N B.
Surg Lt (D) D D Craig to *Wildfire*.

ROYAL NAVAL VOLUNTEER RESERVE

Surg Capt L S Ashcroft to *President*.
Surg Lt Comdrs E F St J Lyburn to *Resolution*, S B Borthwick, F L Stabler, T C Larkworth to *President*, and C Seeley to *Royal Sovereign*.
Surg Lts G L Foss to *President* and D R Matland (provs.) to *Victory* for R N Hospital Haslar.

ARMY MEDICAL SERVICES

The War Office announces that Brevet Col R C Priest, Hon Physician to the King, has been selected

for appointment as Professor of Tropical Medicine, Royal Army Medical College, and Consulting Physician to the Army, with effect from June 6th, 1937, in succession to Col J Heath Spencer, Hon Physician to the King, who is retiring.

ARMY DENTAL CORPS

Lt T A Smitham to be Capt.

ROYAL ARMY MEDICAL CORPS

TERRITORIAL ARMY

Col A P Watson OBE, TD, having attained the age limit, retires and retains his rank, with permission to wear the prescribed uniform.

Lt T W Preston to be Capt.

J L Murray (late Offr Cadet Durham Univ Contgt (Med Unit) Sen Div, OTC) to be Lt.

A D Kelly (late Cadet CSM, Durham Sch Contgt, Jun Div, OTC) to be Lt.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt H W A Post from Active List to be Capt.

ROYAL AIR FORCE

Wing Comdr H S C Starkey, OBE, to No 3 Flying Training School, Grantham, for duty as Medical Officer.

Squadron Leader P D Barling to RAF Station, Feltwell, for duty as Medical Officer.

Flight Lt G H J Williams to Home Aircraft Depot, Henlow.

Flying Offrs N P R Clyde to RAF Station, Waddington, and D F Shaw to RAF Station, Harwell.

Dental Branch—Flight Lt W D Guyler to RAF Station, Seletar, Straits Settlements.

INDIAN MEDICAL SERVICE

Maj Gen Sir C A Sprawson, Kt, CIE, K.H.P., retires. Brevet-Col A A C McNeill has been appointed as Deputy Director of Medical Services at Army H.Q., New Delhi, in place of Maj General F D G Howell, DSO, VC, K.H.S., transferred to Aldershot as D.D.M.S. in March last.

Majs to be Lt Cols S L Patney, D N Bhadran, B Basu, OBE, M A Jafarey, G Verghese, and A D Loganadan.

Col W H Hamilton, CIE CBE, DSO, K.H.P. to be Maj Gen.

Lt Col A F Babonau, CIE, OBE, to be Col.

Lt Col T L Bomford retires.

Capt K Cunningham resigns his commn.

Indian Medical Department—Asst Surgns (1st Cl) to be Lts (Sen Asst Surgns) W G Sherard and S G Jackson. Lt (Sen Asst Surg) A E Gomez, MBE, retires.

COLONIAL MEDICAL SERVICE

Dr B S Jones and Dr G E McVittie have been appointed Medical Officers, West Africa, and Miss M J Lyon, M.B. B.S., Medical Officer, Malaya. Sir Robert G Archibald, CMG, DSO, MD, has been appointed Medical Superintendent, Chacachacare Leprosy Settlement, Trinidad. Dr G E Craig becomes Deputy Director of Medical Service Gold Coast, Mr R M Dannatt, Resident Surgeon, Colonial Hospital, Grenada, and Dr L G W Urck (Medical Superintendent, Chacachacare Leprosy Settlement) Medical Officer of Health, Trinidad.

DEATHS IN THE SERVICES

The death occurred at Southsea on April 11th of Surgeon Captain HUGH PRIDEAUX TURNBULL. Born at Plymouth in June, 1873, he was son of the late Alexander Turnbull, MD of the Naval Medical Service. He was educated at St Paul's School (1884-90) and St George's Hospital London, qualifying M.R.C.S. Eng. in 1897. He at once entered the Navy, was appointed surgeon of the sloop *Torch* (101 men), and landed at Samoa in 1899 for service with the Naval Brigade, and was mentioned in dispatches. He became surgeon commander in May, 1913. He served in the European war on H.M.S. *Roxburgh* (1914-16), and then was put in charge of the Royal Naval Hospital, Bermuda (1916-19). In 1922 he was squadron medical officer in the battleship *Barham*, and he subsequently held the post of professor at H.M. Navigation School, Portsmouth.

PUBLIC HEALTH

MILK EXAMINATION

A COMPARISON OF THE PLATE COUNT AND REDUCTASE TEST

By J STEVEN FAULDS M D

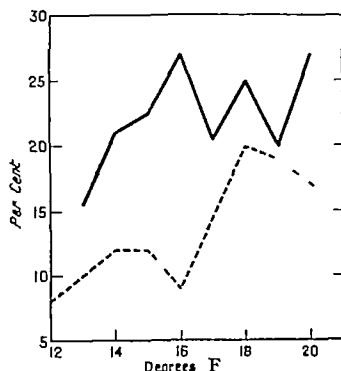
PATHOLOGIST TO THE CUMBERLAND INFIRMARY CARLISLE

DURING the past year several papers have been published comparing the methylene blue reductase test with plate count and *B. coli* estimation. Opinions differ about their merit but it is agreed that the results of the plate count are not consistent. The most obvious reasons for the inconsistency are the difficulty of obtaining an accurate representative sample of a fluid difficult to shake efficiently the difference of temperatures and the agitation of samples during transit, which quickly changes their bacterial content.

To ascertain how far the results of the methylene blue reductase test and the plate count are in agreement I have examined 1500 samples by both of them (end of March to end of November 1936). For the reductase test the technique described by Prof G S Wilson (1935) was observed particularly regarding methylene-blue (Dr Orla Jensen Stockholm) water bath temperature and half hourly inspection. The plate count was carried out according to the Ministry of Health Memorandum (1923) the media being simple Lab Lemco and not a milk enriched variety. Plates were made from dilutions 1/10 and 1/100 in 15 cm plates and 1/1000 and 1/10 000 in 11 cm plates and a count made of each plate unless the total number of colonies made the counting an impossibility. If any plate showed a substantial discrepancy it was discarded otherwise the total count was struck from an average of the most countable plates. *B. coli* was estimated by taking 1 ml. of 1/10 1/100 and 1/1000 dilution in standard McConkey fluid medium. Two technicians did all the plating out and periodically the accuracy was checked by duplicating a sample of milk when the figures obtained were always approximately the same.

In comparing results of the reductase test with the count and *coli* I found that there were 23.3 per cent of samples which passed one test but not the other. The inconsistency was greatest in June and July when we had warmer weather and it evidently depended upon the temperature of the milk on arrival. A total of 5.3 per cent passed the reductase test but failed by the count and *coli* estimation (accepting the tuberculin tested standard 1930 of 200 000 per ml. and *coli* negative in 1/100 ml) and of these 79 milks 80 per cent failed owing to there being *coli* present in 1/100 ml. The remaining 17 per cent passed the count and *coli* standard and yet failed by the methylene blue reductase test. The reductase test was therefore not stringent enough in 5 per cent of milks and too severe in 17 per cent. I then tabulated all those samples which failed by the reductase test and which had not more than 100 000 organisms per ml. and were *coli* negative in 1/100 ml according to the time at which the colour was discharged. There was no apparent correlation. Evidently the time of reduction by the reductase test did not always depend on the total number of organisms. When however all the milk specimens were grouped according to the temperature on arrival and a graph drawn of the discrepancies at each

temperature a curve was produced which while irregular showed that there was a higher percentage of discrepancies at higher temperatures (see Figure). When the discrepancies were subdivided into those that passed the count and *coli* standard and failed



Graph showing the percentage of discrepancies at various temperatures. Continuous line - total discrepancies. Interrupted line - count and *coli* pass reductase test fail.

by the methylene blue reductase test a similar curve was obtained. At a temperature around 13°-16° C there was only 16 per cent of difference between the two results. When the temperature of the milk on arrival was 20° C there was a total difference of 27 per cent.

DISCUSSION

The cause of the reduction of the methylene blue is obscure but with aerobic cultures and correctly performed the test is alleged to be an index of bacterial metabolism. Different organisms have different reducing powers and it has been found that *Streptococcus lactis* reduces even more rapidly than *B. coli* given an equal amount of equivalent suspensions and that strains of homolytic streptococci vary considerably in their reducing time. Some are as active as *coli* while others do not reduce within the six hours. On the whole however we can accept the fact that a milk incubated aerobically that reduces methylene-blue does so because of bacterial growth though the converse does not hold as Malcolm and Leitch (1936) have proved.

When it comes to comparing the plate counts with the reductase test difficulties arise especially when the results of different laboratories are compared. Wilson (1935) states that the experimental error in plate counts is high and that any given count may be either half or double that shown. I tried to check this observation but never managed to obtain a difference of anything like this figure. The error arises more in the dilutions than in the readings of the plates and this observation supports the work of Mattick and others (1935) who found that two observers using exactly the same technique and examining the same milk at the same time got results as close as did one observer plating a milk out in duplicate. On the other hand the results obtained by different workers using the same technique on identical samples of milk

in different laboratories were by no means the same, because of the different conditions the milk was subjected to before being tested. Though Wilson does not regard the tests as strictly comparable, it is reasonable to expect that different laboratories submitting samples of milk to both tests will obtain similar results, but even this does not happen. The accompanying Table compares the results of four independent analyses. Malcolm and Leitch (1936) found 45 per cent of discrepancies, Tudor and Thomas (1936) 22 per cent, and I have found 22 per

Table showing results of comparisons between reductase and plate count tests

—	Number of samples	Per cent failed by reductase and passed by plate count and coli	Per cent failed by count and coli and passed by reductase	Total discrepancies per cent
Malcolm and Leitch	7248	11	34	45
Thomas and Tudor	400	9	13	22
Nichols and Edwards	1000	24*	22*	10
Faulds	1500	17	5	22

* No coli estimation

cent, Nichols and Edwards (1936) found that of milks with counts between 30,000 and 200,000, 24 per cent reduced methylene blue while of milks with a count of over 200,000 22 per cent failed to do so, but when these were classified into readings above and below 200,000 the error was reduced to 10 per cent. These observers did not include the presence of *B. coli* in 1/100 ml. nor did they adhere to the standard time the milks were to be kept, according to the memorandum, differentiating morning from evening samples. The time the methylene blue was read was 5 and 6 hours, not 4½ and 5½ as stipulated. The figures of Malcolm and Leitch show much higher plate counts than I obtained, but that could be accounted for by the enriched medium used.

The plea that the reductase test is better than the older method must be based on its being either simpler to perform or more accurate. The accuracy I doubt, for to quote Breed (1936), New York State agricultural bacteriologist, "the mere fact that duplicate results of the reductase test are generally uniform does not, of course, prove anything regarding the accuracy of the results." The advantage must be in simplicity. The reductase test is much easier to perform and saves time and material, it can be carried out by semi skilled labour unless we include the coliform test. By including this, which I feel is necessary for accuracy, the dilutions entail time, material, and skill, and the end result is a test requiring the same skill, time, and material as the old plate count and coliform test.

The argument of economy is doubtful. The average charge for the plate count and coliform test was 3s 6d and the suggested charge for the reductase test alone 1s, or, when the coliform test is added, 1s 6d. The cost of the material is less than 1d but the overhead charges and arrangements for collecting samples and supplying outfits justifies this charge. The laboratory charges however are only a fraction of the cost of sampling. In some areas the council employs a whole time sampling officer who has to take morning and evening samples of milk. In other areas, as in Cumberland where the

area of milk production is large, the sampling is done by the local councils through their sanitary inspectors and a grant is made by the county council to the inspectors for every sample taken. In the case of rural samples this grant is 5s, but in urban samples it is 1s. In Westmorland, the sum is a flat rate of 2s 6d per sample. Now a reduction of 3s 6d to 1s will be no economy if the Ministry's recommendation of sampling each milk twelve times a year be carried out, for the cost will rise in proportion.

CONCLUSIONS

The methylene blue reductase test is much simpler to apply than the plate count and it yields 75 per cent of comparable results. On the whole it is a more stringent test in warm weather and less stringent in cold weather—the opposite of what is needed. The arguments in favour of its adoption as an economy are weak if the cost of the collection is taken into account. If the coliform test has to be performed in addition, the advantage of the reductase test over the plate count and coliform test is not so great as would appear.

I wish to acknowledge with thanks the help and stimulus I have received from Mr R. Simpson, F.R.C.V.S., county veterinary officer for Cumberland.

REFERENCES

- Breed, R. S. (1936) Personal communication to Dr J. F. Malcolm quoted by Malcolm and Leitch.
 Malcolm J. F. and Leitch, R. H. (1936) *Scott J. Agric.* October 1936.
 Mattick, A. T. R. (1935) *J. Dairy Res.* 6 130.
 Ministry of Health (1923) Memo No. 139.
 Nichols, A. A., and Edwards, S. J. (1936) *J. Dairy Res.* 7 255.
 Thomas, S. B. and Tudor, J. A. (1936) Unpublished figures.
 Wilson, G. S. (1935) Bacteriological Grading of Milk. *Spec. Rep. Ser. med. Res. Coun. Lond.* No. 206.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 3RD, 1937

Notifications.—The following cases of infectious disease were notified during the week. Small-pox, 0, scarlet fever, 1001, diphtheria, 926, enteric fever, 16, pneumonia (primary or influenzal), 1937, puerperal fever, 27, puerperal pyrexia, 110, cerebro spinal fever, 24, acute poliomyelitis, 4, acute polio-encephalitis, 1, encephalitis lethargica, 3, dysentery, 9, ophthalmia neonatorum, 108. No case of cholera-plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 9th was 3314 which included scarlet fever 856, diphtheria 961, measles 45, whooping cough 530, puerperal fever 16, mothers (plus 11 babies) encephalitis lethargica 283, poliomyelitis 1. At St. Margaret's Hospital there were 18 babies (plus 8 mothers) with ophthalmia neonatorum.

Deaths.—In 123 great towns,* including London, there was no death from small pox, 2 (0) from enteric fever, 23 (0) from measles, 5 (1) from scarlet fever, 31 (8) from whooping cough, 20 (4) from diphtheria, 47 (14) from diarrhoea and enteritis under two years, and 101 (17) from influenza. The figures in parentheses are those for London itself.

Barking and Cardiff each had 1 death from enteric fever. Six deaths from measles were reported from Birmingham, 3 from Walsall. Fatal cases of whooping cough were scattered over 21 great towns. Brighton reported 3. Fatal diphtheria was reported from 20 great towns. Liverpool had 3 deaths.

The number of stillbirths notified during the week was 274 (corresponding to a rate of 43 per 1000 total births), including 38 in London.

* Twickenham with a population of 86,600 became a great town on April 1st as the result of a change of boundary.

PANEL AND CONTRACT PRACTICE

Panel Practitioner Fined for Non attendance

A DOCTOR has been fined £5 by the Middlesex insurance committee for breach of the medical service regulations. There was evidence that she was called at 6.40 P.M. on Dec. 19th to visit a young woman who was a panel patient. She did not come and was sent for again at 10 P.M. Again she did not come but left a prescription on the window sill and gave the parents a bottle of medicine and some oil to rub on the patient's chest. She excused herself on the plea that she was tired after a very busy day. The father tried to obtain another doctor's services in vain. Next morning the doctor called at 10.30 diagnosed bronchitis asked for the prescription which had been left on the window-sill altered it and said she would send a nurse. At 12.30 P.M. she came again in answer to a fresh summons sent for an ambulance and had the patient removed to hospital. At the hospital the parents were told that it was too late to do anything more the patient died at midnight of the same day from pneumonia. The amount of the fine may perhaps be deemed to indicate that the most serious view was not taken of the practitioner's default. While the insurance committee evidently could not overlook what had occurred those who know the strain under which practitioners work at times when ill health is specially prevalent may be ready to appreciate that moments may come when the doctor is genuinely too tired to attend.

Dispensing in Scotland

SOME statistics relating to the Scottish drug bill were recently analysed by the superintendent of the Central Checking Bureau in Scotland. It appears that during 1936 some four and a quarter million prescription forms were received from many sources: (1) 54 insurance committees in Scotland (2) the government of Northern Ireland (3) various local authorities (4) the Ministry of Pensions (5) public medical services. Only the first two categories include National Health Insurance prescriptions. The receipts of Scottish panel chemists have risen by 79 per cent in the 20 years from 1915 to 1935 and by another 9 per cent in 1936. The average price per form had increased from 0.74d. in 1915 to 13.32d. in 1935 and 13.60d. in 1936. These figures did not include the cost for insulin. In 1935 the cost per person in Scotland for drugs and prescribed appliances ranged from 17.17d. to 52.76d. with an average of 23.17d. In England the cost ranged from 23.1d. to 52.8d. with an average of 36d. Frequency in Scotland ranged from 1.10 to 2.03 with an average of 1.73 as compared with 2.69 to 0.70 and 4.60 in England. The average price per prescription form ranged from 11.21d. to 17.90d. with a general average of 13.32d. The comparable English figures were 7.1d. 10.1d. and 7.38d.

SOME insured persons were the recipients of expensive prescriptions for example six prescriptions for amino acetic acid cost in all £20 10s. 6d. one insured person still under treatment received during eleven years 1083 lb. of an ointment which cost £138. one insured person in a period of three years received insulin liver extract and mixtures at a total cost of £235.

Prescribing in Lancashire

THE Lancashire panel committee has been examining the report issued by the insurance committee

in April 1936 on the cost of drugs and medicines prescribed for insured persons in the county. The cost of supplying drugs to the insured population has increased steadily during the last twelve years not only in Lancashire but in all parts of the Kingdom. The committee are anxious to help to prevent further increases and indeed to bring about a reduction in cost if this can be done without reducing therapeutic efficiency. In Lancashire frequency has increased from 3.87 in 1923 to 5.03 in 1935 but the committee point out that this latter figure is only 0.2 higher than in London and is 1.40 lower than in Manchester. The increase corresponds to that for visits or consultations all over the country. The Insurance Acts Committee showed that in 1923 each insured person was seen on an average 3.75 times and in 1935 the figure had risen to 6.11. The increase in frequency is attributed entirely to the altered habit of the insured population and to the increased amount of work done by the doctors. Recent health propaganda has caused the insured person to become health conscious and even disease conscious. He takes more notice of slight ailments and consults his doctor earlier and more frequently. Gradually the insured population is becoming composed of persons who never at any time have paid private fees for medical attendance whereas the original insured population had already acquired an economic habit in this respect. It is likely therefore that the frequency factor has not yet reached the peak and will not do so until the entire insured population consists of persons who have never received medical attendance in any other way. The panel committee express the opinion that the frequency factor is almost entirely outside the control of the doctors.

With regard to the total cost per prescription the dispensing fee is a fixed cost practically constant and is also entirely outside the control of the doctor. The ingredient cost however was 3.79d. in 1935. A number of prescriptions are for specially expensive products—e.g. about 100 autogenous vaccines (two guineas each) are prescribed every year and about 160 stock vaccines at half a guinea. A few months ago the attention of the Lancashire panel committee was called though not by way of complaint to a prescription for Kellon's serum costing over £7. One doctor ordered in seven days for one patient oxygen costing £75. Many prescriptions are for expensive products for intramuscular or intravenous injection and other special prescriptions cost four to five shillings. If the cost of expensive but perfectly justifiable prescriptions were separated before the average for the ordinary prescription was taken the ingredient cost of a 10 oz. bottle of medicine would probably be somewhere about 2.5d. The use of proprietary products does not seem to have been an important factor in the increased cost of prescribing but the committee believe that some slight economy might be effected by the avoidance when possible of the use of such remedies. In their opinion the occasions on which the ordering of proprietary products can be justified are comparatively few.

The committee observe that in May last the Minister of Health stated in reply to a question in the House of Commons that he had received a report from the Lancashire insurance committee to the effect that there was unnecessary prescribing by doctors in Lancashire. So far as the panel committee were aware the insurance committee had expressed no such opinion.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM A TADDYGADDY

III

'The wisdom of a learned man cometh by opportunity of leisure, and he that hath little business shall become wise

THAT, oddly enough, was written also by Ben Sira, and in the very same chapter as that into which we have dipped already. It seems untrue at first, but when we go on reading we find out what he really was getting at. He was thinking of leisure from bodily toil. He had few illusions concerning that. "Send him to labour that he be not idle, for idleness teacheth much mischief," he wrote of the slave. Apparently there were people in his neighbourhood, men in advance of their time, who were trying to set up some sort of Labour Party. Ben Sira did not at all approve. "How," he asks, "can he get wisdom that holdeth the plough, and that glorieth in the goad, that driveth oxen, and is occupied in their labours, and whose talk is of bullocks? So every carpenter and workmaster that laboureth night and day. They shall not sit in the judges' seat, nor understand the sentence of judgment: they cannot declare justice and judgment, and they shall not be found where parables are spoken."

* * *

That is not quite in accord with modern ideas, though there are plenty only too ready to agree. How does the suggestion affect us? Few of us in active practice have much leisure, yet some of us do become wise in spite of our considerable business. Indeed it is due largely to our press of work that we acquire wisdom, or at any rate a useful store of common sense. That, I have felt for many years, is not used as freely as it should be. There is so much more we doctors might do, so much we have to offer, in the public service. Some of us serve on town councils, some as magistrates, but relatively few of us do that. The plea put forward for not doing it is that we have no time to spare. Is that wholly true? My experience is that there is always time for what one really wants to do. I say that advisedly. I have been a town councillor, I am a magistrate, and I have never in my life been leisured. The years during which I was a town councillor were extremely busy ones, but there was always time for a meeting. Only very seldom were the meetings barren of interest. I found my brethren, especially the more aged of the aldermen, fascinating to study, and I made a collection of mayoral impressions that is quite beyond all price. That a doctor should be interested in the doings of a health committee is obvious. What is not so obvious is the undoubted fact that as a member of a health committee he has opportunities for studying the underlying causes of all manner of public activities, and—even more illuminating—inactivities. If he has cultivated a sense of humour—and he will not be a real doctor if he has not done that—he will find in his work on a town council infinite reason for laughter, and if he can succeed in making the lay brethren laugh with him he will have done more than justify his retention of his seat.

* * *

On the bench his opportunities are even greater. Knowledge of men and women, understanding of

the infinite twists and turns of human behaviour, are needed in the courts more, perhaps, than any where else. Why, the man on the bench must be asking all the time, did that fellow in the dock behave as apparently he did? Why? That must be the keynote all through. And—I say this advisedly, and with a due sense of responsibility—that keynote seems very often to be muffled. The fact of some act contrary to public order is established: the reason for that act is not. That is where we come in, or should come in. Our training and our experience have caused us to look, almost instinctively, for causes. We know that without some understanding of the cause no problem of our professional life can be fully solved: that treatment under such a condition can be no more than empirical. So is it with the problems of the courts. And that is of the very first importance when we are dealing with the problems of the juvenile courts. Children do the oddest things which get them into trouble with the police. Why? It should be our job to find out if we can. It is not easy. Often it is extremely difficult. However, if our good fortune gives us a seat in a juvenile court we shall have plenty of opportunities for trying. Those courts, as established now, provide facilities, freed from all red tape fetters, for making any investigation that may seem advisable.

* * *

Our training and experience should render us peculiarly fitted for work in the courts. We know the people of our district better, perhaps, than any body else. We are familiar with the language called by the police "obscene." It is really no more than ugly and lacking originality: the coarse back chat of a rough fellow stirred by (not infrequently alcoholic) emotion. It is not easy to persuade our lay brethren of the bench to appreciate that. We know how easily back street tempers get stirred by the bare fact that back street people see too much of one another, living as they do almost in one another's pockets. We understand the bitterness lying dormant, and often not so very dormant, in a yard common to three or four little houses. We know something of the back street pride that is so very easily wounded. All these are features that bring people to the defendant's pen in what is called, quite improperly, the police court. If we will, and if our luck has given us a seat on the bench, we may do much in the way of interpreting behaviour that seems, at the first glance, very odd.

* * *

"They shall not understand the sentence of judgment."

Ben Sira wrote that a very long time ago, and he did not mean by it quite what it may seem to mean to-day. But it is as true to-day as when he wrote it. "They" very often do not understand. How should they? The sentence so often is quite incomprehensible to the sentenced. A fine of a couple of pounds, to be levied from a man whose income already is inadequate, means that he and his family will have to go short of vital necessities. A sentence of fourteen days' imprisonment, with the consequent "sack," means—what does it mean? We, whose working life has taken us in and out of little houses, visualise at once the problems raised by action in the courts. If we have the will we become vocal.

about them. That does not make us popular in our immediate circle but should we play for that sort of popularity? * * *

In practice a doctor who takes part in public life is likely to find it all rather difficult. He knows too much. That is a very decided handicap—in the eyes of other people. On the health committee he will be in immediate conflict with those who own or are friends of those who own insanitary property. On the bench he will be in conflict with those who have an itch for punishing and no desire whatsoever for understanding. He is not unlikely to find his path very thorny indeed. But if he be dogged—and what real Taddygaddy is not dogged?—he will win. For there are those who will heed if only he express himself with sufficient force.

Why is it that so few of us relatively take part in public life? I think it is because we are like miners content to be a class apart. Miners shelter in ugly dwellings remote from other people. We shelter behind brass plates and surgery lamps. While actually as sociable as any other men in our working time we assume a sort of esoteric aloofness and most unfortunately many of us carry our working habits into our play time. I suppose we are, in a way, shy. Also there is this undoubted fact to be faced—a doctor must not take sides on any subject too fervently if he is to make good at his main job. His day-to-day work brings him into contact with all sorts, and he does not wish to offend any. That is reasonable, but it does in practice mean that a great deal of potentially valuable public activity is allowed to run to waste.

CORRESPONDENCE

ANÆMIA AND THE PITUITARY

To the Editor of THE LANCET

SIR,—We have read the annotation on p. 877 of your last issue with considerable interest but we should like to point out that it does not give a very clear view of the position. This is, we suggest, as follows—

(1) We published in 1934^{1,2} a series of papers describing the appearance of a gastric lesion in the rabbit and other animals following the injection of posterior lobe extracts. This has been confirmed by a large number of workers.³⁻⁶

(2) We have also shown that small doses of pituitary extract will inhibit gastric secretion.⁷

(3) We showed that the injection of posterior lobe extract into the rabbit will cause in about 20 per cent of the animals a very severe macrocytic anaemia and since this was associated with reticulo-endothelial and with excessive production of bile we were led to make the following comment: The interpretation of these results is at present obscure. The possibility arises that the control of blood destruction by the reticulo-endothelial system may be vested outside the system itself and may reside in the posterior lobe of the pituitary gland.⁸

(4) Gilman and Goodman in a series of papers⁹⁻¹¹ have repeated these observations and have fully confirmed the fact that the injection of posterior lobe extract into rabbits will produce an anaemia of exactly the same type as that described by us. They however advance a different explanation from the very tentative suggestion put forward by ourselves. We shall in the near future produce further evidence on this point.

(5) The paper referred to by your annotator by McFarlane and McPhail,¹² again confirms our findings using guinea pigs. These workers demonstrate the development of anaemia in guinea pigs following the injection of posterior lobe extracts. They killed their animals at a date so long after the injection that the stomach lesion that would have been present would undoubtedly have been healed. It is interesting to note also that these workers found that the anaemia did not come on in the guinea pig until so late a date after the injection as to render the explanation advanced by Gilman and Goodman extremely unlikely.

Our object in writing this letter is to point out that in all these papers there is no question of the validity of the fundamental observation that a severe

anaemia may be produced by the injection of pituitary extracts.

We are Sir yours faithfully

E C DODDS
R L NOBLE

Courtauld Institute of Biochemistry, The Middlesex
Hospital London W 1 April 15th

REFERENCES

- 1 Dodds F C, Noble R L, and Smith E R (1934) *Lancet* 2 918
- 2 — (1934) *J Soc Chem Ind, Lond* 53, 10 0
- 3 Bergman, G (1935) *Bull Soc Biol, Paris* 10 91
- 4 Lucchesei G, and Zillich E (1935) *Gior Clin med* 16 610
- 5 Selby, H, Stehle R L, and Collip J B (1936) *Canad med. Ass J* 24, 339
- 6 Nedetz A J (1936) *Proc Soc exp Biol N Y* 31 150
- 7 Dodds F C, Hills G M, Noble, R L, and Williams P C (1935) *Lancet*, 1 1099
- 8 — and Noble, R L (1935) *Nature* 135 88
- 9 Gilman, A, and Goodman L (1935) *Proc Soc exp Biol N Y* 32 285
- 10 — (1936) *J Pharmacol* 37 No 2
- 11 — (1937) *Amer J Physiol* 118 241
- 12 McFarlane, W D, and McPhail M K (1937) *Amer J med Sci* 193 356

THE TAVISTOCK CLINIC

To the Editor of THE LANCET

SIR,—The council of the Institute of Medical Psychology have decided after much deliberation to change its title and revert to the original name of The Tavistock Clinic. I should like through your columns to notify the profession of this fact so that no confusion may arise in their minds.

The Tavistock Clinic was the original name adopted when in 1920 the work of providing psychological treatment was begun in a house in Tavistock square. As the clinic grew its name became well known amongst the profession at home and also on the Continent and in the United States. A good many people seem hardly to have realised that it was changed some four or five years ago and to them there will seem nothing unusual in our new title.

The change has seemed advisable largely because of the constant confusion which arose as a result of the non-medical institutes of psychology and psychotherapy which have arisen during the past few years. Some of these have gone so far as to copy our literature and our stationery, evidently feeling that this was likely to be of value to them. Any hospital is reluctant to change its name because there is inevitably some loss of goodwill particularly amongst those who support or might support the work. I am confident however that we can rely upon our many friends in the profession to see that such a loss does not occur and that whatever good reputation the Institute of Medical Psychology had shall be

[APRIL 17, 1937]

carried over to the Tavistock Clinic which certainly needs all the help that they can give it
I am, Sir, yours faithfully,
HENRY B BRACKENBURY,
Chairman of the Council
London W C 1, April 12th

The Tavistock Clinic Malet place

MEDICAL EDUCATION OF WOMEN

To the Editor of THE LANCET

SIR,—Medical women will have welcomed the sympathetic letter from the regius professor of physic at Cambridge in the *Daily Telegraph* of March 25th, in which he supports a plea made by a group of Cambridge women students for more educational facilities in London. I doubt, however, whether his suggestion that the big London schools should admit women, and thereby win the applause of the multitude by a "generous gesture," will tempt them to act against their feelings and possibly their judgment. Medical education is a practical issue, and its development depends on expediency as well as lawfulness. I remember that four London schools admitted women during the war when fees were scanty, and excluded them again when male students became more numerous.

I do not think it is necessary, or desirable, to hammer at unwilling London hospitals, and the Cambridge students little know what they are in for if they should obtain concessions by that means. Women are probably better off even in a second-rate school without prejudice, than in a first-rate school where they are unwelcome.

The opposition of the London hospitals is not altogether without reason. It is said, for instance, that the success of the medical schools depends to some extent upon athletic prestige, and we are assured that athletes hate to be educated with women. It is hardly to be expected that the authorities should forego a clientele they want, for a clientele they don't want. There is another objection, one which may have a wider appeal. In the choice of students a medical school is guided by the return it is likely to get from them—either intellectual or commercial. Compared with men, there is said to be a greater risk of a woman failing to finish the course and still more risk of her failing to practise her profession. The survey of the fate of women medical students educated at St. Mary's between 1916 and 1924 (*Lancet*, 1930, 2, 1370) is of interest in this connexion. Popular medical schools may consider it wasteful to take this chance when they can avoid it. The commercial return from women is also likely to be less valuable because their practices are not usually so lucrative either to themselves or to the consultants.

All this need not unduly depress us. The time will surely come when St. Bartholomew's, St. Thomas's, and Guy's (I quote the hospitals mentioned by Prof. Ryle) will realise that a superior woman may be worth more to them than an inferior man, and in this connexion, also, the report mentioned above is illuminating. Meanwhile the larger non-teaching hospitals, such as the West London and the Royal Northern, might find it a positive advantage to take women as students. Neither is London the only centre of learning, there must be nearly a dozen other universities which provide good medical education. Oxford and Cambridge strike one as being obviously suited to provide the clinical work for modern hospitals, fully staffed and equipped with numerous professors and research departments. It should be understood that no plan for extending medical education is going to be the slightest use to

women unless it includes giving them resident hospital appointments. Openings in hospitals are a far more pressing need than openings in medical schools, and it is misleading, to say the least of it, if a medical school offers equality of education when the hospital connected with it excludes women from competing for the resident posts after graduation.

I am, Sir, yours faithfully,
NORAH H SCHUSTER.

Upper Harley street, N W, April 7th

ERGOTAMINE TARTRATE IN MIGRAINE

To the Editor of THE LANCET

SIR,—I can confirm the experience of your correspondents on the value of ergotamine tartrate in the treatment of migraine. I have been subject to attacks of migraine for 63 years. During the last 40 years I have tried every diet and tested every drug that anyone could suggest. I have seen every consultant in London of whom I heard as having a special knowledge of migraine and have had various injections but all without avail. Twelve months ago I began using ergotamine tartrate in the form of Femergin tablets and it is the first remedy with any prophylactic effect which I have taken. In my case it has been more the severity than the frequency of the attacks which it has influenced. I have been taking two tablets every night now for over a year without any ill effect except that for a couple of weeks at first there was a daily attack of slight intestinal colic for about two hours. When I began the treatment I was spending a day in bed every ten days but the interval at once lengthened to three months. The intervals of freedom from headache during the continuance of the pain must of course continue. No doubt with injections the relief would have been still more marked.

I am, Sir, yours faithfully,
J H CROWLEY
Jersey C I, April 9th

PRECIPITATE LABOUR

To the Editor of THE LANCET

SIR,—Some of your readers may be interested in the following case—

A European primipara aged 28, healthy except for a mild degree of glycosuria controlled without insulin by ten lines of R. D. Lawrence's diet, went into labour at full term on the night of July 29th, 1936, at 11 10 P.M. The pains were slight and only amounted to abdominal discomfort but, merely as a precaution, she called the nurse at 11 30 P.M. At 11 40 she had the first real pain and this was followed by another which ruptured the membranes and produced the infant at 11 45 P.M., much to the dismay of the nurse who had naturally not anticipated such rapid developments and had made no attempt to control the passage of the head over the perineum. The placenta followed the infant within three minutes and examination of the patient on my arrival at midnight revealed a complete tear of the perineum and from 1½ to 2 in. of the rectum. The infant weighed 6½ lb and the whole duration of labour from the first premonitory signs until the delivery of the placenta was less than 40 minutes.

Immediate suture of the torn perineum and rectum resulted in an uneventful convalescence.

The two questions suggested by this case are, first, whether the glycosuria had any connexion with the precipitate labour and, secondly, why nature in such a case did not provide for the preservation of at least the rectal sphincters.

I am, Sir, yours faithfully,
W B CRAWFORD
Diplol Assn March 18th

COLLECTIVE AUSCULTATION AND THE REGISTRATION OF HEART SOUNDS

To the Editor of THE LANCET

SIR,—Dr Vaughan Henriques's interesting paper in your issue of March 20th leads me to give you an account of my own researches. With the help of my assistant, Mr G Minot engineer E.P.C.I. an apparatus has been invented which makes it possible (1) to reproduce by loud-speaker the murmurs and sounds of the heart, and (2) to register on films and records the sound vibrations heard in the loud speaker. Our instrument which was standardised by the firm Petit (Ezanville, Seine-et-Oise France) has been in use for two years in my service at the Tenon Hospital in Paris. It was shown at the International Cours Tomarkin in Spa (Belgium) in September 1935 to the Société des Médecins des Hôpitaux de Paris on May 15th 1936 and to the Société de Biologie on May 16th 1936. It is made in three parts: the *telestethophone* for collective auscultation, the *phonostethograph* for registering the sounds on films, and the *medical pick up* for registration of sounds on records and their subsequent reproduction. It has been made especially for the heart, but we have made use of it also for the arteries, lungs, and abdomen.

The *telestethophone* includes a microphone an amplifier and a loud speaker. The microphone is intended to catch and transform into electric waves the audible vibrations of the chest wall. Its special structure renders it insensitive to the infrasonic vibrations of this coat and also the vibrations of the air. For this last reason the sounds diffused by the loud-speaker have no influence on the microphone; it is therefore quite possible to speak near the patient without interfering with the clearness of the auscultation and to place him near the loud speaker without any screen in between. The amplifier is regulated so as to amplify the electric oscillations the frequencies of which are included in the audible scale of the auscultation phenomena (20 to 800 periods a second). It is placed in a metal portable box 20 in. long by 10 in. wide by 12 in. high. The *telestethophone* has neither dry battery nor

accumulator and is connected to the main. To make it work one needs only to press two knobs: one of which regulates the intensity, the other the tone.

The *phonostethograph* is included in the box of the *telestethophone*. It consists of a special oscillograph joined to the loud-speaker and permitting the registration of the vibrations on a film as they are heard. This apparatus has also been made without a loud speaker but with one or two head phones for hearing. The sensitiveness of the normal ear varies greatly according to the frequency of vibrations and the oscillograph has been regulated so that its sensitive ness resembles that of the ear for vibrations of 20 to 800 periods a second. The reproduction of heart sounds (phonocardiogram) is thus rendered as exact as possible and its interpretation is made easier by the simultaneous registration for example of the electrocardiogram on the same film. A tracing with notches (*en dents de scie*) can also be made.

The *medical pick up* allows us to engrave on a record the cardiac sounds and murmurs heard in the loud-speaker or ear phones of the *telestethophone*. A special little apparatus allows us also to engrave on the record oral explanations of the sounds heard. The *medical pick up* when used alone gives faithful reproduction by loud-speaker of the sounds registered. A special process of registration and of reproduction enables us to eliminate the noise of the friction of needles. Records of the auscultation of the heart (*stethodiscs*) are being prepared for issue.

This instrument is useful for teaching because it enables a whole class of students to hear a patient's heart or the records made from auscultation. It is also of value at medical meetings for the presentation of interesting cases. From a practical point of view it enables us to follow the sounds and murmurs of the heart at various periods of an illness and leaves us documentary evidence of previous conditions. Thus in Paris it has been adopted by the Ministry of Pensions. Lastly from a scientific point of view the study of films is rich in new ideas.

I am Sir yours faithfully

C LIAU

Professeur Agrégé in the Medical Faculty of Paris and Physician to the Paris Tenon Hospital.

Paris April 4th

OBITUARY

FREDERICK STAPLETON DICKEY HOGG

M.R.C.S. Eng. L.R.C.P. Lond.

WE regret to learn of the death of Dr Frederick Hogg for 35 years medical superintendent of the Dalrymple Home for Inebriates Rickmansworth which occurred at a nursing home at Brighton on April 5th.

The elder son of the late Sir Frederick Hogg, Director General of the Post Office of India, he was educated at Repton and Jesus College Cambridge and went for his medical training to St. George's Hospital. His career at the hospital was broken by an interval of some three or four years during which he was engaged in sheep farming in Australia, but on his return to the hospital he took the English double qualifications in 1888. He held appointments at the West London Hospital and the Ear, Nose and Throat Hospital after which he went to India in the service of the Bengal Nagpur Railway. At the expiration of his appointment as chief medical officer to the railway he returned to England and entered for a short time into a partnership in north London. His wife's health led him to leave London and take a practice in Southwester and

while there he was elected medical superintendent to the Dalrymple Home for Inebriates Rickmansworth. This position he occupied for 35 years until the institution was wound up under the conditions of its foundation. At the Dalrymple Home he made a name for himself in the treatment of inebriety. His management of the patients was sympathetic and remarkably successful while his notes on drug habits were the result of careful and ingenious attention many of his experiments on the effects of the remedies employed and their dosage and periods of administration being attended with success often of a permanent nature. He took his patients into his confidence and made them the intelligent assistants of their own treatment, inviting them also to keep in regular touch with him especially through their own doctors. He was asked on many occasions to record his experiences but always seemed unwilling to do so, the one exception being the article on drug habits in Quain's Dictionary of Medicine. But the practical nature of his insight into inebriety was known to many colleagues who consulted him and was often of valuable assistance to THE LANCET.

Dr Hogg had lived in retirement at Brighton for the last three years, a cardiac condition entailing upon him a very quiet life. His devotion to the interests of his patients in a residential institution which he never seemed free to leave led to the making of few personal friends, but to those who knew him his simple and generous nature as well as his all round knowledge of his work made a strong appeal. He had been a widower for some years and leaves one son.

FRANCIS GARLAND COLLINS, M.R.C.S. Eng D.P.H.

Dr Francis Collins, medical officer of health for West Ham, who died on March 30th, was a distinguished public servant. He received his medical education at University College, London, and the London Hospital and took the English double qualification in 1907. After serving as house physician to the London Hospital he was appointed assistant medical officer to the Whipp's Cross Infirmary and from that time his whole professional life was spent in municipal medical work. He was appointed assistant medical officer, becoming later senior resident medical officer at the Plaistow Fever Hospital and was tuberculosis officer at West Ham when he took a commission in the R.A.M.C. He saw service throughout the war, first at home and then in Serbia and with the army at Salonika. He returned to his duties as tuberculosis medical officer, and in 1924 was appointed medical officer of health for West Ham, a position which he held at the time of his death. He earned golden opinions by his work, paying special regard to maternity and child welfare, while the reduction in the maternal mortality-rate in the district under his supervision was remarkable enough to obtain special comment in the House of Commons from the Minister of Health.

Dr Collins made communications to THE LANCET of a valuable character. In 1920 he related the after history of 570 tuberculosis dispensary cases, being at that time medical adviser to the West Ham insurance committee. He gave facts and tabular statements in support of the views that it is seldom that any but early cases derive permanent benefit from sanatorium treatment, and that much more strenuous preventive measures should be adopted, such as the foundation of additional suitable open-air schools and institutions for very advanced cases. He collaborated with Dr Helen Campbell, then assistant medical officer for maternity and child welfare at West Ham, in reporting a series of cases of pemphigus neonatorum in which the practical conclusions were arrived at that any midwife or doctor who had been in contact with a case should not attend another confinement until after thorough disinfection of both person and belongings, adding that the disease should be made notifiable.

Dr Collins had been in bad health for a long period, the result of dysentery incurred during his war services, and for the last five months of his life he was confined to bed. He was only 55 years of age at the time of his death.

CÉCILE BOOYSEN, M.R.C.S. Eng

THERE are very many who have learned with regret of the death on April 7th of Dr Cécile Booyesen. This occurred after an illness of five weeks' duration at the age of 42. Her career was that of a woman of outstanding vigour and strong personality. She was the daughter of a South African farmer who, having determined to become a doctor, borrowed the money

necessary for her medical education. After attending classes at King's College, she went for clinical training to Charing Cross Hospital and in 1926 obtained the English double qualification. She served as house surgeon at Charing Cross Hospital and acted also as clinical assistant at the Paddington Green Hospital for Children. She then went into practice in north London and in 1935 founded a voluntary birth control clinic, the Goswell Women's Welfare Centre, in a very poor and overcrowded district. Her environment as well as her natural impulses led to a deep interest in politics, which manifested itself in her support of the labour policy. The horrors of war made a strong impression upon her, and after attending the Brussels Peace Conference in 1936 she started and worked actively for the Medical Peace Campaign where she acted as honorary secretary.

Prof J. A. Ryle writes: "The news of Dr Cécile Booyesen's death will have brought grief and distress to all who knew her. Among the many able women doctors in London, she belonged to a group and a generation which stands particularly high in my estimation, and established unobtrusively a position which will cause her to be long remembered and revered. It was a privilege to meet her in consultation and to observe the care and thought and consideration which she devoted to her patients and which in turn earned their evident devotion to her. She was the organising secretary and inspiration of the Medical Peace Campaign in this country, and in her conduct of its affairs she must have expended a great deal of the energies of her later months. Whatever success attends this movement in the years to come—and it must be recognised as one of the first serious attempts to investigate the psychological causes and consequences of war, and to study and anticipate the medical problems associated with war—a very great measure of that success must be attributed to her self-imposed task. That task had for its goal the better and safer world for which we all hope but few so assiduously strive."

RICHARD WHITTINGTON, M.D. Oxon

Dr Richard Whittington, whose death occurred at Hove on March 30th, was educated at King's College, London, and Merton College, Oxford, proceeding for his medical training to St Thomas's Hospital. He took honours in the natural sciences tripos at Oxford and graduated as M.B., B.Ch. in 1898, proceeding to the M.D. degree at a short interval. At his hospital he held for a time an appointment in the skin department and was later resident medical officer at the Royal Free Hospital, and house physician and pathologist at the Sussex County Hospital, Brighton. He acted for a time as surgeon to the Second African Field Force and recorded his experiences in a paper in *Treatment* entitled "Prophylactic Measures against Enteric Fever in Armies." He settled in practice in Brighton over thirty years ago and became prominent alike as practitioner and public worker. He was an active member of the British Medical Association, holding the post of chairman of the Brighton division, and being a representative at the recent annual meeting at Oxford. During the war he served on the staff of the 2nd Eastern General Hospital which was officered by the R.A.M.C.

Dr Whittington will be long remembered in the borough for his public work. He was a member of the old Brighton board of guardians and served on the education committee of which he was chair-

man He was for twelve years a member of the Hove town council, and served continuously on the East Sussex council of which body he was at the time of his death an alderman He was on the directing bodies of the Brighton, Hove, and Sussex Grammar School, the Brighton Technical College and School of Art and the Hove County School for Girls The conscientiousness with which he performed all his public duties was illustrated by the record of his attendances for during the year 1935-36 out of 162 summonses to meetings by the Hove town council and the Hove education committee, he attended 138 times During the last year of his life he suffered from cardiac symptoms which made of this energy a remarkable record of devotion to duty

Dr Whittington married a daughter of the late Mr E L J Ridsdale of Rottingdean a sister of Mrs Stanley Baldwin. She predeceased him leaving one daughter who was a frequent companion of her father at social functions where official positions made his presence necessary

THE LATE PROF C C CHOYCE

Dr Arthur Davies writes: So deeply do we revere the memory of Charles Coley Choyce at the Seamen's Hospital that it would be a dereliction of duty not to support the appreciations of his worth that have been so well expressed by his friends at University College Hospital. Coming to us as house surgeon to Mr William Turner in 1902 he returned in 1905 as medical superintendent succeeding Mr Johnson Smith who had held that post with great distinction for over 40 years His appointment coincided with a change of policy as regards the staffing of the hospital and this was effected with characteristic courtesy by Choyce who always referred to his predecessor as that great gentleman J S In 1907 he was appointed assistant surgeon and became teacher in operative surgery worthily upholding the high traditions that had been established at the Seamen's Hospital. In the same year he was

selected to shoulder another heavy responsibility being appointed Dean of the London School of Clinical Medicine, an adventurous essay into post graduate teaching undertaken by the staff of the Seamen's Hospital and by extramural lecturers of eminence The daily task of coördinating the activities of such an unparalleled combination of teachers was successfully carried out by Choyce notwithstanding the constant difficulties of finding adequate material suitable for clinical demonstrations. The fierce protests made by the teaching staff rightly importunate for such material were met with equanimity and serenity and peace was marvellously conserved as none misdoubted his motives none his absolute integrity It was at this period that Sir Malcolm Morris, one of the post graduate teachers selected Choyce as editor of the now famous System of Surgery and again a difficult task was carried through with conspicuous success At that time Choyce was a young and relatively junior surgeon and it was not easy for him to coördinate the strong individualistic opinions of his distinguished contributors nevertheless his editorial blue pencil prevailed. During this period began his friendship with Mr Gwynne Williams and their daily discussions on current surgical practice were a happy blend of pungency and good humour Little did either think that this friendship was to be consummated at a later date in common service to University College Hospital. In 1912 Choyce became senior surgeon and in 1919 consulting surgeon to the Seamen's Hospital. Associating ourselves with all that has been so well written of him we would recall how often it fell to Choyce to undertake tasks that were arduous and extremely difficult and how consistently he succeeded. At all times and in all places he was unchangeably himself in loco parentis to all and sundry serene, vallant and wise Our thoughts go out to his father in New Zealand and to his wife to whom we owe our especial gratitude for his comradeship vouchsafed to us and which is now our precious heritage.

PARLIAMENTARY INTELLIGENCE

PHYSICAL TRAINING AND RECREATION BILL

In the House of Commons on April 7th Mr OLIVER STANLEY President of the Board of Education moved the second reading of the Physical Training and Recreation Bill He said that Clause 1 of the measure gave statutory authority to the National Advisory Council which had been at work since March 1st Clause 2 provided for a scheme of local committees whose membership would be like that of the National Council—invited to serve as individuals rather than nominated as representatives of different bodies. Those committees would be charged with propaganda and with seeing that the scheme and its possibilities were brought home to the locality and would examine applications from voluntary bodies for assistance from the Government. All such applications would be submitted by them to the Grants Committee which was dealt with in Clause 3 Sir Henry Pelham would be chairman of the committee Clause 4 was a machinery clause which dealt with the powers of local authorities. The most important new power was that given to a local authority to provide throughout the area that sort of community centre which at the present moment a housing authority could provide on its own housing estate but which the local authority was not able to provide anywhere else Clause 5 dealt with the compulsory purchase of land and Clause 6 remedied the difficulty under the Education Act which enacted that if the local education authority

provided certain facilities for social recreation and physical training they had unlimited powers for children under 16 but powers in regard to those above that age only if they attended educational institutions. The same powers would now exist in regard to those above 18 as in the case of the younger children Clause 7 dealt with the setting up of the national college The whole scheme was now ready for submission to the National Advisory Council He still heard criticisms that this scheme was militaristic but the leaders in the physical health movement on the Continent had not been in the past and were not now Germany and Italy but Sweden Czechoslovakia the democratic popular States, and he thought that we could draw valuable lessons from the systems adopted in those countries Those systems had no element of compulsion and were not applicable as a whole for it was not wanted to substitute physical training for games but to supplement games by physical training The keep fit slogan was one of the best ever invented What was not so widely known was the remedial effect that physical training could have and that wise training given under proper instruction, and with a scientific basis could do much to remedy some of those minor and indeed some of the major ills to which a highly civilised and industrialised society was liable

Attempts had been made to found arguments against this scheme upon a nutritional basis, but this was an entire mistake The machinery necessary

to ensure that the school child should come to physical training with a well nourished body was in existence, and if it was properly used there should be no malnutrition in our schools. He was determined that that machinery should be used, and he appealed to all hon. Members to help him in impressing the importance of this machinery on local education authorities in their areas, and in inducing them to put it into the fullest possible operation. He would remind the House that the recent block grant made available largely increased sums to the local authorities on which services of this kind might well have the first call. Anyone who read the First Report of the Advisory Committee on Nutrition would gather from its whole tenor that the picture of a nation in general suffering from malnutrition was a false one. The committee laid stress on the possibility of extending the consumption of milk both in the schools and afterwards. That report would, of course, receive careful consideration from the Government. It was a difficult and not wholly an economic problem. It was not just a question of the price of the product and the pocket of the purchaser, but a question of taste, of belief in it, and although a child could lead a man to a milk bar a whole Cabinet could not make him drink.

This was a scheme not only for physical training, but also for recreation. It was part of a problem just as important, namely, the use of leisure. Leisure was to be different not only in content, but in quality from anything that the general masses of the people had experienced up to now. It was going to be regular and not spasmodic. What use were we going to make of such leisure? He was quite certain that regular leisure of the kind he mentioned would demand some more active occupation than just sitting about and resting. The real use of leisure would call for the development of interest, taste and knowledge. Physical recreation, vigorous games, physical training, and hiking would form an important part of any right use of leisure, but it could not be all. He did not believe that physical activity alone was over going to be wholly satisfactory, but the facilities provided for in this Bill might well lead to the development of other and wider interests.

Mr LEES SMITH thought there was a great deal of exaggeration in the belief that strenuous physical exercises up to about 25 years of age would guarantee health for the rest of a long life. Lord Dawson, in a letter to the *Times* a few days ago, had pointed out that he had seen a group of territorials marching out that they had very selected men—and he carefully noted them and came to the conclusion that 50 per cent of them were suffering from physical defects which mere exercises would not remedy, and which would take a heavy toll in later life. Lord Dawson, was one of the two medical members of the committee controlling the scheme, and he wished there had been more of remedial exercises, but the development of open air recreation, differing in type from violent physical exercises.

A matter which was quite definitely at issue between the two sides of the House was the connexion between this scheme and the problem of nutrition. He knew that the Board of Education had issued figures showing that the number of children in which nutrition was apparently bad, and who would come under the scheme, was 0.7 per cent. He did not think that the record of the Board of Education on this question of the proportion of children suffering from malnutrition was a very reliable one. The figures were based upon the impression made on medical officers of health by looking at children. It was clear that the standard at children was that to which he was accustomed in the neighbourhood in which the school was situated. According to that standard—if they took it as a standard—they got the figure of 0.7 per cent with bad nutrition, and 74 per cent who were normal. The whole basis of attempting to judge this problem by the method of looking at the

children in front of them, and asking whether they were up to the average of the neighbourhood, was entirely unscientific and was now being condemned. Mr STANLEY. When the right hon. gentleman says that the method is now being condemned, may I point out to him that the Nutrition Advisory Committee say that the method of the Board of Education is the most promising?

Mr LEES SMITH said that the committee added that the trial had not been sufficiently prolonged to establish its reliability and the method was not reliable. There was another method which scientists said gave results—viz., the calculation of the number of proteins, calories, and vitamins required for physical efficiency at different ages. Then one calculated what it cost, taking the average over a group of people, to buy sufficient food to provide the minimum essentials of those elements. Then one calculated what proportion of the people of this country were buying that food and could afford to buy it. Those were the methods which were being followed up by the Committee on Nutrition, which had not yet reached a final conclusion as to what percentage of the population, judged by this method, would be found to be suffering from malnutrition, but individual members had reached their own conclusion. They could take either of the two limits, the report of the British Medical Association, which stated that 30 per cent of the school population were suffering from malnutrition, as against the 0.7 per cent of this report, or the report of Sir John Orr, who was a member of the committee, and who had come to the conclusion that the optimum diet was absent from 50 per cent of the school-children. The most valuable part of the Government scheme would undoubtedly be that it would force open the whole issue of the standard of living of the people of this country.

Sir FRANCIS ACLAND said he welcomed the Bill. Undoubtedly it was a move in the right direction, and would do great good. But he was sure that the campaign which it would be necessary to have behind this Bill to ensure better physical training and recreation would have gone better in that House if it were being more visibly connected with, and accompanied by, a preliminary campaign for better nutrition.

Viscountess ASTOR said she begged the Government when considering the question of physical fitness to bear in mind that there was no other way that they could get the children properly trained, fed and matured except by beginning before they got into school. No child under 18 ought to work more than 40 hours per week. If they attended to that they might in time get a really A 1 nation to that they might in time get a really A 1 nation.

Mr EDE said that the nursery school had its place, but they must be very careful to see that it was not made an excuse for bad social conditions.

After further debate,

Mr SHAKESPEARE, Parliamentary Secretary to the Board of Education, said that his right hon. friend had every reason to be gratified at the reception given to the Bill by members of all parties. The Government had appointed a body of experts on nutrition who he hoped would educate the layman in the course of time.

It was moonshine to conceive that the people, who might come under this Bill—that was to say, some 14,000,000 persons between the ages of 14 and 35—were so enfeebled by lack of nourishment that they could not stand up, let alone take any recreation. Mr LEES SMITH, he thought, had rather confused two things—the assessment of the nutritional state and the means to be taken to overcome any deficiency in the nutritional state. Although the present system of assessing nutrition was not foolproof, it was the best yet devised, and indeed the experts said that it was the best at present known. He assumed that the right hon. gentleman that if research would find a better one—and he believed that the League of Nations was trying to find a better one—the Government would consider it with a view to adopting it.

The Bill was read a second time and the financial resolution in connexion with it was agreed to in Committee.

EXTENSION OF CONTRIBUTORY PENSIONS SCHEME

In the House of Commons on April 8th Sir KINGSLEY WOOD, Minister of Health, moved the second reading of the Widows, Orphans and Old Age Contributory Pensions (Voluntary Contributors) Bill. He said that the measure would concern at least 2,000,000 persons enabling them to participate in the benefits of the Widows, Orphans and Old Age Contributory Pensions Act on a voluntary basis. Persons who had received these benefits were broadly speaking those who were already compulsorily insured under the National Health Insurance Act or who having once been insurably employed had elected to become voluntary contributors. There had been one considerable gap in the provisions of the principal Act. There had been persistent requests from a section of the community, many of whom paid to provide for others this protection which they needed just as much themselves. Our scheme of social insurance considerable and extensive as it was, could not be regarded as complete so long as persons with small means but not themselves insurably employed were unable to share in its benefits. This Bill had been popularly called The Black-coated Workers Bill. That did not by any means adequately describe its scope. It would be almost impossible even if it were desirable to make a scheme of this kind compulsory because experience had shown that compulsory contributions could be successfully collected only when linked with the payment of wages. It was essential that if the scheme was not to be unfair between applicants and not indefinitely expensive to the taxpayer they must lay down two broad principles. In the first place contributions in a scheme of this kind should increase with the age of entrants and as there was to be no medical examination whatever there must be a substantial waiting period before benefits were payable. They had been able to make provision for continuance in insurance even when full contributions had not been paid and for maintaining the insurance of a contributor who was unable to pay contributions owing to protracted illness which prevented him from earning a living. The Bill permitted of entrance within a year of the inception of the scheme at a favourable flat rate subject to a maximum age limit of 55. The great majority of the men who entered would be married and many of them would be getting on in years. The scheme would naturally be most attractive to them but the insurances provided for in the scheme were mainly for the benefit of women. Its chief attraction for men would be that it enabled them to make provision for widows and children in the event of premature death and he would point out that of the 1s 3d asked for under the scheme nearly a shilling was apportioned for making provision for the wife, widow or children. The Government Actuary put the number of unmarried women of middle age at 500,000 who would satisfy the conditions of eligibility in the first year of the scheme. The difference between the £100 a year income limit for men and the £250 a year income limit for women was not one of sex differentiation at all. It had relation to the responsibilities of the burdens that had to be carried. The greater part of the man's risk was the security of his wife in her old age or his widow and children in the event of his premature death and there was no such cover available for him in any insurance institution on any terms that he could afford. Under this scheme the Government gave adequate benefit and security according to needs, circumstances, burdens and responsibilities in a fair and proper way. As far as the State contribution and help was concerned if anything it erred in favour of women rather than men. He could promise the House that he would

examine the precise terms of the measure when it reached the Committee stage but he commended it to the House as one more measure of British social security and justice and one which he suggested would take a considerable place among social services which were unequalled in the world.

After further debate the Bill was read a second time and the financial resolution in connexion with it was agreed to in Committee.

The financial resolution in connexion with the Physical Training and Recreation Bill was agreed to on report.

THE FACTORIES BILL IN COMMITTEE

The Factories Bill was further considered by a Standing Committee of the House of Commons on April 8th. Major LLOYD GEORGE was in the chair. Examination was begun of Part IV of the measure which deals with special provisions and regulations in relation to health safety and welfare.

Clause 40 (which prescribes that where a process in a factory causes dust or fumes likely to be injurious or offensive measures shall be taken to protect the workers and to prevent the accumulation of dust or fumes in a workroom).

Mr RHYB DAVIES moved an amendment to insert the words "or other impurity." He said that there were other impurities which were altogether outside the description given in the clause.

Mr G. LLOYD, Under-Secretary Home Office, said that on further inquiry the Home Office found that there were impurities which would not strictly be covered by the words in the clause. They were therefore ready to accept the amendment with other necessary consequential alterations.

The amendment was agreed to.

On Clause 47 (which deals with washing facilities and meals in relation to certain dangerous trades).

Sir E. GRAHAM LITTLE moved an amendment to leave out the word "washing" and insert "cleansing." He said he was the only medical man on the Committee and he had received suggestions from expert associations outside Parliament as to what they would desire to put into this Bill. A number of amendments had been put forward by two expert bodies—the Royal Sanitary Institute and the Society of Medical Officers of Health. It had been a common experience with him for patients to show signs of injuries to the skin caused not by the substances with which they had been working but by materials used for washing their hands. Washing was invariably understood as washing with soap and water and the purpose of the amendment was to give a wider choice.

Sir J. SIMON, Home Secretary, did not deny that the point had force but he opposed the insertion of the word "cleansing." The expression "washing facilities" was well known in the industrial code and it was most undesirable to introduce at one point a phrase like "washing and cleansing" and to leave the more familiar expression "washing facilities" in other places. No doubt there were certain soaps containing a chemical ingredient which if brought into contact with the skin of persons suffering from a certain ailment might do more harm than good but that was an argument against washing and they must take a rather broader view. He doubted whether the legal construction which might be put on these additional words would add to the clearness of the law.

Sir F. GRAHAM LITTLE said that he had voiced the opinion of the experts, but in view of what the Home Secretary had said he asked leave to withdraw the amendment.

The amendment was withdrawn.

Mr. SIMON moved an amendment giving the Secretary of State power to prescribe by regulations what in practice was a room in which there was sufficient silicosis dust to be dangerous.

The amendment was agreed to.

Mr RHYS DAVIES moved an amendment which he said was designed to make sure that persons employed in dangerous and injurious processes should not take food or drink in the room where the processes were carried on.

Mr LLOYD said that if the Committee inserted the amendment in the form in which it was moved they would really be making not a reasonable prohibition but an unnecessary restriction. It was essential in regard to the dust which it was poisonous even to swallow, to provide that workers should not stay in the workroom during their rest or meal periods, and also that they should not swallow the smallest particle of food outside their rest or meal periods. With regard to asbestos or silica dust, it was sufficient to provide, however, that they should not remain there during their meal times or rest periods and thus be inhaling the dust.

The amendment was withdrawn, and Clause 47 as amended was ordered to stand part of the Bill.

On Clause 48 (which provides that the Home Secretary may make such special regulations as appeared to him practicable for extending the provision and use in factories in which the weaving of cotton or other cloth is carried on, of shuttles which are not capable of being threaded or readily threaded by suction of the mouth, and any such regulations may impose duties on workers as well as occupiers).

Mr RHYS DAVIES moved an amendment to delete the word "special" in relation to the regulations. He said that the habit of what was called "shuttle kissing" had grown up but now both employers and workers would like to do away with it. The Home Secretary should be able to make regulations to deal with the matter without having to go through all the machinery of inquiry that would be necessary if the regulations were special regulations.

Mr J HERWORTH said that most employers provided apparatus for threading a shuttle, but the difficulty was to get the workers to use it.

Sir J SIMON said it did not appear to have been absolutely proved that "shuttle kissing" caused injurious consequences on such a matter without making regulations. That was the reason why they put in full inquiry. That was the reason why they wanted the words "special regulations" if they could and stop the habit of "shuttle kissing" if they could and he would undertake to take the matter up as soon as the Bill became law for the purpose of making proper inquiries. He promised to look further into the matter.

The amendment was withdrawn and Clause 48 was ordered to stand part of the Bill.

Clause 49 (which provides that no person shall use white phosphorus in the manufacture of matches) and Clause 50 (which deals with humid factories) were both ordered to stand part of the Bill with minor amendments.

On Clause 51 (which provides that no work shall be carried on in any underground room, which is certified by the inspector as unsuitable as regards construction, light, or ventilation, or on any hygienic ground, or where adequate means of escape in case of fire are not provided).

Mr SHORR moved an amendment to make the clause provide that no underground room should be used for work unless it was certified by the inspector to be suitable.

Mr BANFIELD, supporting the amendment, said that an underground room was not a suitable place for processes to be carried on at all. There were hundreds of underground workrooms that ought to be closed, many were absolute rat-holes.

Mr LLOYD said Mr Banfield had referred to underground workrooms which were in the nature of objectionable cellars, but an underground room in the clause meant any room half of which was below the level of the ground. In a number of the luxury flats in the West End of London there were rooms of that kind. The information in the Home Office did not indicate that conditions in regard to

lighting and ventilation were generally bad. On the contrary, a comprehensive inquiry had shown that conditions were much better than might be anticipated and that an improvement had taken place. If the amendment was carried a large number of inspectors would be wanted and there would be a considerable delay in dealing with bad cases.

After further debate, Sir J SIMON said that his advisers took the view, and he did not differ from it, that the clause was in proper form. But he would consider the whole matter again.

The amendment was withdrawn.

On Clause 52 (which provides that a basement bakehouse shall not be used as a bakehouse unless it was lawfully so used at the date of the passing of the Bill into law, and any basement bakehouse which, for a period exceeding 12 months, is not used as a bakehouse shall not be so used again).

Mr BANFIELD moved an amendment to provide that all existing basement bakehouses should not be used after the expiration of five years after the passing of the Bill into law.

After further debate, Sir J SIMON said that the proposal in the amendment had only just come before him. It had never been put forward previously in any of the representations made to the Home Office when the Bill was being drafted. It was their policy to discourage the use of underground bakehouses and he was disposed to share the strong feeling shown about the matter. He could not, however, accept the amendment without having an opportunity of consultation.

Mr BANFIELD agreed to withdraw the amendment, but Mr G BUCHANAN objected, and it was negatived.

The clause was ordered to stand part of the Bill.

Clause 53 relating to the temperature of ironing rooms in laundries and fumes in laundries was also ordered to stand part of the Bill.

The Committee adjourned.

The Factories Bill was further considered by a Standing Committee of the House of Commons on April 18th. Major LLOYD GEORGE was in the chair.

On Clause 54, which provides that a young person shall not be employed to lift, carry, or move any load so heavy as to be likely to cause injury,

Mr RHYS DAVIES moved an amendment to delete the word "young."

Mr LLOYD, Under-Secretary, Home Office, said that regard should be had to a proviso in the clause that empowered the Home Secretary to make special regulations prescribing the maximum weights which might be lifted, carried, or moved by persons employed in factories. That power to make regulations, he said, was regarded as an important way of dealing with special cases and they intended to use that power.

After further debate, Sir JOHN SIMON, Home Secretary, said that the clause was a new one in the Factory Code and was an improvement. There were already regulations to prevent young persons lifting heavy weights, but they could not put into an Act of Parliament some prohibition which was so vague in its terms that it could not be effectively and fairly applied.

The amendment was withdrawn and the clause was ordered to stand part of the Bill.

On Clause 55, which prohibits the employment of female young persons in any part of a factory where the following processes are carried on: melting, or blowing glass, other than lamp blown glass, annealing glass, other than plate or sheet glass, evaporating of brine in open pans or the storing of salt.

Mr W BROMFIELD moved an amendment to include in the prohibition the making or finishing of bricks or tiles not being ornamental tiles.

Sir J SIMON said there was a new sub-clause which gave the Home Secretary power to extend the clause by regulation to any process in which it appeared undesirable that female young persons should be employed, and if he was satisfied that the prohibition

referred to ought not to apply to any of the processes specified or ought to be relaxed he might make regulations accordingly.

The amendment was negatived and the clause was ordered to stand part of the Bill.

On Clause 56 which prohibits the employment of women and young persons in certain processes connected with lead manufacture.

Sir E. GRAHAM LITTLE moved an amendment to exclude women from the prohibition. He said there was no evidence that women were more subject to lead poisoning than men. A discrimination of the kind proposed in the clause would operate against the employment of women.

Viscountess ASTON supported the amendment. Anything that would shut out women from any employment would be resented by them.

The amendment was negatived and the clause was ordered to stand part of the Bill.

Clause 57 which includes provisions in regard to the employment of women and young persons in processes involving the use of lead compounds, was ordered to stand part of the Bill.

Clause 58 (which gives the Home Secretary power to make special regulations for safety and health) Clause 59 (prohibition of importation and sale of articles made with prohibited materials) Clause 60 (power to take samples) Clause 61 (certificates required before approval of building plans relating to cotton cloth factories) Clause 62 (notification of accidents in factories) and Clause 63 (power to extend dangerous occurrences provisions as to notice of accidents) were all ordered to stand part of the Bill.

On Clause 65 which requires notification of certain industrial diseases.

Mr. ELLIS SMITH moved an amendment to delete the list of diseases specified in the clause (lead phosphorus, arsenical or mercurial poisoning or anthrax) and substitute the definition "any industrial disease to which the provisions of Section 48 of the Workmen's Compensation Act 1925 apply or silicosis."

Sir E. GRAHAM LITTLE supported the amendment. Sir J. SIMON opposed it and the amendment was withdrawn.

The Committee adjourned.

NOTES ON CURRENT TOPICS

Voluntary Sterilisation

In the House of Commons on April 13th on the motion that the Speaker do leave the chair on the House going into Committee of Supply on the Civil Estimates.

Wing-Commander JAMES called attention to the need to implement the report of the Committee on Voluntary Sterilisation and moved that, in the opinion of this House the Government should give further consideration to the potentialities of voluntary sterilisation for hereditary defectives in accordance with the unanimous recommendations of the Departmental Committee that reported to the Minister of Health on Jan. 8th, 1934.

Sir KINGSLEY WOOD, Minister of Health replying to the debate which followed said there was no question that opinion in this country was growing in favour of sterilisation but they could not disguise from themselves the fact that opposition remained and that there was still much conflict of opinion particularly on religious grounds. The medical profession were by no means unanimous on the matter. It was desirable that ample time should be given for full consideration of the whole problem and for public opinion to develop as he thought it was developing.

Wing-Commander JAMES said that in view of what the Minister had said he would withdraw his motion.

Mr. ROWSON called attention to the question of nutrition.

Sir KINGSLEY WOOD said that the Ministry of Health Advisory Committee on Nutrition in their most valuable first report said that a good deal of

further information on the facts must be obtained before it was possible to reach a final policy on nutrition. He had asked the authorities to review the scale of income observed in connexion with the requirement for repayment for milk or for food supplies. He had also asked the authorities to consider afresh the question of a properly organised system of meals, and he had reason to believe that the authorities would be able to continue and extend the work they were now doing. The Department would undertake certain dietary surveys which the Advisory Committee recommended. This would take time but would not stop the work now going on.

The motion that the Speaker do leave the chair was carried by 161 votes to 120.

QUESTION TIME

WEDNESDAY APRIL 7TH

Underground Protection against Air Attack

Major STOURTON asked the Home Secretary to what extent underground protection would be made available to the civilian population of London in the event of an air attack.—Mr. GEORGE LLOYD, Under-Secretary, Home Office replied: Where accommodation exists below ground level which can be suitably protected against splinters falling debris and poison gas, the occupiers of premises will be advised to make use of it. As however underground accommodation is rarely proof against a direct hit by a high explosive bomb the overriding consideration in the choice of air-raid refuges must be to keep the population well dispersed in splinter proof and gas-proof accommodation whether it is below or above ground level.

Medical Jurisprudence

Captain ELLISTON asked the Home Secretary whether in accordance with the recommendations of the advisory committee on the scientific investigation of crime it was proposed to establish a medico-legal institute for pathological research and as a training centre for experts in medical jurisprudence.—Sir JOHN SIMON replied: The Committee's report is primarily concerned with measures for improving medical education in certain directions; while I am in sympathy with their recommendations they fall also within the province of the Minister of Health with whom I am in consultation on the matter. My hon. friend will of course appreciate that the Committee's proposals would involve a substantial charge upon the Exchequer.

Medical Research Council and Silicosis

Mr. JAMES GRIFFITHS asked the Lord President of the Council what progress had been made by the Medical Research Council in their investigations into the problem of silicosis and other lung diseases among coal miners; and whether he could give any indication as to when the committee's investigation would be completed.—Mr. RAMSAY MACDONALD replied: The standing committee appointed by the Medical Research Council to direct research into disease of the lungs among industrial workers has already promoted several investigations into silicosis and other conditions; the results have been published in a series of official reports and scientific papers. These researches were in most cases not specially directed to the particular problem of lung disease among coal miners but during recent months attention has been concentrated on this, and a scheme of intensive investigation in South Wales has been initiated. The work already done shows the problem to be one of great difficulty and complexity and the investigation is not likely to be completed in less than two years.

Mr. J. GRIFFITHS said that in view of the unsatisfactory nature of the reply and the position of the men who were affected he would raise the matter at the earliest opportunity.

Hospital Treatment in Staffordshire

Mr. MANDER asked the Minister of Health if he was aware of the great dissatisfaction caused in Wednesfield and Willenhall as a result of the coming into force on

April 1st of the new arrangements for the treatment of invalids, both public assistance applicants and hospital contributors, under the new Staffordshire County Council scheme, if he realised that it was now necessary for patients to be taken a distance of from 8 to 10 miles to Wordsley Institution instead of receiving treatment in the immediate vicinity at the New Cross Hospital of the Wolverhampton Borough Council, and what resident medical officers were available at Wordsley Wood replied that the plans of the Staffordshire County Council for the reorganisation of the hospital and other institutional accommodation in the county include the reconstruction of the present institution at Wordsley as a general hospital to serve the sick in the southern part of the county. The hon. Member will appreciate that the improvement of institutional services and the better classification of patients, which were one of the objects of the Local Government Act of 1929, must sometimes involve the removal of certain patients to a greater distance from their homes but if the hon. Member has any particular cases of hardship in mind I will make inquiries. With regard to the last part of the question, I understand that the medical officer of the Wordsley Institution lives near at hand and is always available, and that the council propose to appoint a resident medical officer or officers as soon as the reconstruction permits.

Overcrowding in Croydon District

Dr SALTER asked the Minister of Health whether he was aware that, despite the serious shortage of accommodation available at rents within the means of the lower paid wage-earners in the Croydon district and the grave overcrowding prevalent in the area, the Corporation of Croydon had made regulations under which an applicant for a municipal house must have resided in the borough for a period of at least 10 years to render such applicant eligible for a dwelling let at a rent of less than £1 per week, and whether such a policy had his approval. Sir KINGSLEY WOOD replied: I understand that the regulations made by the town council include a condition to the effect mentioned, but that this condition is relaxed in the case of overcrowded families, persons displaced by slum clearance and the abatement of overcrowding, and other cases where special circumstances exist. My approval is not required to the regulations made by local authorities for the management of the houses provided by them.

Cost of Living Inquiry into Family Budgets

Mr SANDYS asked the Minister of Health whether it was the intention of the Government to institute the diet recommended by the Advisory Committee on Nutrition in their recent report, in so far as these were not already covered by existing investigations. Sir KINGSLEY WOOD replied: Yes Sir. The dietary surveys have already commenced. As regards family budgets, it is hoped to obtain information as to food consumption by the course of the inquiry which is being undertaken by my right hon. friend, the Minister of Labour for the purpose of the revision of the cost of living index number. The method of carrying out the remaining proposal is receiving immediate consideration.

MONDAY, APRIL 12TH

National Health Insurance Referees

Mr GRAHAM WHITE asked the Minister of Health how many referees had been appointed under Section 90 of the National Health Insurance Act 1924 and the rates of their remuneration. Mr HUDSON, Parliamentary Secretary, Ministry of Health, replied: The number of referees in England and Wales is eight and their remuneration is a fee not exceeding 10 guineas a day or 12 guineas where a hearing extends beyond seven hours.

Supervision of Nursing Homes

Miss RATBORNE asked the Minister of Health (1) whether he would institute an inquiry into nursing homes all over the country in view of the many complaints as to the

inadequate and insufficiently qualified nursing staffs and the insufficient precaution taken in regard to the prevention of infection, and (2) whether he had reason to believe that nursing homes were adequately inspected from the point of view of the sufficiency and qualifications of the nursing staff, and also that adequate care was given to the prevention of infection, particularly when maternity patients were taken in addition to general medical and surgical cases. Mr HUDSON replied: The attention of local authorities has recently been called to the importance of the adequate supervision of nursing homes in a circular letter of Sept 30th last. As at present advised my right hon. friend sees no necessity for a special inquiry, but he will look into any case which the hon. Member may have in mind if she will communicate the particulars to him.

Nursery Schools

Mr LYONS asked the President of the Board of Education the latest progress in the development of nursery schools, and what proposals were in immediate contemplation. Mr GEOFFREY SHAKESPEARE replied: The present position is that 86 nursery schools are recognised for purposes of Education, of which 83 are recognised for Board of Education, and three as efficient but not in receipt of grant. In addition, 34 proposals for new nursery schools have been approved in principle and in a number of these cases final plans have been approved by the Board, and seven proposals are at present under consideration.

TUESDAY, APRIL 13TH

National Health Insurance Drug Fund

Colonel ROPNER asked the Minister of Health whether, in view of the incidence of sickness during the early months of the present year, he proposed to make special provision to ensure that the Drug Fund should be able at the end of the year, to meet in full its liabilities to chemists and bodies corporate dispensing under the National Health Insurance Acts. Mr HUDSON replied: As the Drug Fund relates to the calendar year it would be premature at this stage to estimate the extent, if any, by which payment of the chemists' accounts will be affected by the sickness experience early in the year. My right hon. friend undertook at the time the present agreement with the chemists was made to consider representations regarding any abnormal deficit in the Fund.

Overcrowding in Scotland

Mr MAXTON asked the Secretary of State for Scotland what progress had been made since the passing of the Housing Act, 1935, in combating the problem of overcrowding in Scotland, and in how many places had the appointed day been fixed. Mr ELLIOTT replied: Since the passing of the Housing (Scotland) Act, 1935, tenders have been completed for 36,012 houses and 24,377 houses have been approved for subsidy purposes under either the Act of 1930 or the Act of 1935, but, under arrangements designed to secure that the most economical use is made of the new accommodation they are used for slum clearance or overcrowding purposes as local circumstances or need may dictate. There is no record of the number of families actually removed from overcrowded houses prior to April 1st, 1936, but from that date to Feb 28th, 1937, 6,444 families living in overcrowded conditions were rehoused. The appointed day under the Housing (Scotland) Act 1935, has so far been fixed for only one area, namely, the Dewart Ward of the Burgh of Kirkcaldy. The date fixed in this instance is May 15th, 1937.

INTERNATIONAL CONGRESS OF OPHTHALMOLOGY.—This congress will be held at Cairo from Dec 31st to 15th. Several tours leaving Marseilles on Dec 3rd have been arranged in connexion with it under the auspices of the International Council of Ophthalmology. Visits will be paid to Upper Egypt, Palestine, and Syria. Dr E. Marx of Rotterdam is acting as secretary general of the congress, and further details about the tours may be had from the Bureau des Croisières et Voyages Médicaux, 29, Boulevard Adolphe Max, Brussels.

MEDICAL NEWS

University of London

At a recent examination the following candidates were successful —

D.P.H.

Part I — Beatrix H. Bakerell J. S. B. Bray Enid S. Davies Sylvia G. Gavron E. H. Hartle M. U. Hayat S. M. H. Naqvi A. W. Rashid H. C. Salzena Margaret B. Steel M. A. de S. Suriyawansa and V. M. Vaitro

Sir Ernest Graham Little has been appointed representative of the University at the celebrations to be held on the occasion of the 400th anniversary of the foundation of the University of Lausanne from June 3rd to 5th.

Three lectures on the meninges and the cerebro-spinal fluid will be given on May 24th, 26th, and 28th at University College at 5.30 p.m. by Dr Lewis H. Wood, director of the school of medicine and professor of anatomy in the Johns Hopkins University, Baltimore. Dr J. Henderson Smith, head of the department of plant pathology at Rothamsted experimental station, will speak on virus diseases of plants at 5.30 p.m. at the Imperial College of Science and Technology on May 13th, 20th and 27th. Prof. J. M. Hollborn, F.R.S. Sir Samuel Hell, professor of chemistry and director of the chemical laboratories of the University of Manchester will also lecture there at 5.30 p.m. on May 24th, 25th and 26th. He will speak on the chemistry of the carotenoids and vitamin A. Prof. H. Rein, director of the physiological institute of the University of Göttingen will lecture at University College on May 3rd, 4th and 6th at 5 p.m. His subject will be some economising mechanisms as a condition of the body's adaptation to increased activity. It has also been arranged for Prof. H. Frederick, professor of physiology in the University of Liège to give a lecture at King's College on interpretation of the normal electrocardiogram. The lecture will take place during June and the date will be announced later. The lectures are open without fee to all who are interested.

The following examiners for the diploma in theory and practice of physical education have been appointed —

Anatomy — Dr Doris Baker and Dr Lilian Dickson
Hygiene — Dr Ruth Proctor and Dr James Kerr
Theory of Gymnastics — Dr Anna Broman and Surgeon-Commander G. Murray Levick.

University of Birmingham

On May 18th and 20th, at 4 p.m. Prof. Arvid Wallgren, physician-in-chief to the Children's Hospital at Gothenburg will deliver the Ingleby lectures. The first will be on erythema nodosum and the second on childhood infection and adult type of pulmonary tuberculosis.

From May 24th to June 4th a post-graduate course will be held on the care of the injured workman and from June 14th to 25th there will be an intensive course in industrial hygiene and industrial medicine. Further information may be had from Dr Howard Collier at the department of industrial hygiene and medicine at the University.

Provisional arrangements are being made for a post-graduate course in neurology to be given from May to July in hospitals associated with the University. Further information may be obtained on application to the dean of the faculty of medicine of the University, Edmond street Birmingham 3.

Pathological Research in Relation to Medicine

Our advertisement columns contain particulars of a course of lectures on this subject to be given in the institute of pathology and research at St. Mary's Hospital at 4 p.m. on Tuesdays from April 27th to June 22nd. The first is by Sir Almonroth Wright, F.R.S., principal of the institute and the other speakers will be Dr F. M. R. Waldo, Mr W. T. Thompson, F.R.S., Prof. I. C. Dodds, Mr F. T. Riley, Dr Wilson Smith, Prof. J. A. Gunn, and Dr W. I. Gye. An abstract of each lecture will be found in our advertisement columns the week before its delivery. The lectures are open to all members of the medical profession.

Royal College of Surgeons of England

A meeting of the council was held on April 8th with Sir Cuthbert Wallace the president in the chair. The Jacksonian prize for 1936 was awarded to Mr W. E. Underwood, F.R.C.S. (St. Bartholomew's Hospital). The subject for the Jacksonian prize for 1938 will be surgery of the heart. The John Hunter medal and triennial prize was awarded to Mr L. F. O'Shaughnessy, F.R.C.S. for his research work on the surgery of the thorax.

Mr Ernest Eric Young and Mr Arthur George Wells were elected fellows of the college under the charter which permits the council to elect annually to the fellowship without examination two members of the college of twenty years standing.

It was decided that the post of fourth house surgeon at the Royal Surrey County Hospital Guildford should also be recognised for the six months surgical practice required of candidates for the final examination for the fellowship.

Diplomas of membership were granted to A. E. H. Eades (Univ. of Edin.) to K. C. Royce (Univ. of Oxford and St. Thomas's Hosp.) and to Eric Vernon (Univ. of Manch.). Diplomas in child health were granted jointly with the Royal College of Physicians to the following candidates —

Margaret D. Baber, H. B. Bann, M. L. Blawie, V. S. H. Davies, J. G. H. Frew, J. H. Green, Joyce B. Jewson, Bernard Kruton, A. H. M. Korha, S. K. Lee, U. K. Lim, Louise A. Mathison, Dorothy Miller, A. L. Smallwood, S. F. L. Stenling, Elizabeth J. McQ. Thomas, Enid L. Weatherhead, H. A. Williams, Margaret C. Winter and Susan S. Yang.

St. Bartholomew's Hospital Medical College

A post-graduate course open to all will be held at this hospital on June 17th, 18th and 19th. Further information may be had from the dean of the medical college.

Royal London Ophthalmic Hospital

The Gifford Edmonds prize at Moorfields has been awarded to Mr J. Bruce Hamilton of Hobart, Tasmania for an essay on the significance of heredity in ophthalmology. The prize is awarded biennially.

Central Midwives Board

This board has unanimously re-elected Sir Conyns Berkeley as its chairman. Mr John Bright Banister and Mr Eardley Holland have been appointed to fill vacancies in the membership of the board.

Toronto Anatomical Session

The fifty-third annual session of the American Association of Anatomists was held on March 25th to 27th at the University of Toronto. Prof. Fredene T. Lewis (Harvard) the president delivered an address at the dinner on the fundamentals of cell shape. There were 151 papers and thus many of them had to be presented simultaneously. Six round table conferences were held covering subjects like spore production, capillaries, modern conceptions of the neuron, gross anatomical research, heart and teeth. Anatomy now claims as its own all changes in cells having to do with function and there were papers dealing with subjects such as the hypophysis, the adrenal and other ductless glands, the adrenal-pituitary relationship in lactation, changes in the adrenals, livers, and thyroids of guinea pigs as affected by environmental temperatures and thymus, and the effect of cortical adrenal extract on sympathetic ganglia of adrenalectomized cats. There was much emphasis on the influence of heredity on form. Some of the papers bordered on the pathological field such as that on abnormal blood production in hydrops fetalis. One of many communications on the blood field that lymphocytes could develop in tissue cultures into myelocytes. Other papers were of the other anatomical type including a notable one on the arrangement of the cranial venous sinuses in the occipital region in man. Various aspects of the nervous system were also discussed. Seven motion pictures were shown illustrating such phenomena as fetal behaviour, leg transplantation and fetal respiration. An afternoon was set aside for the presentation of sixty demonstrations.

Dr Charles David Green, who died in St Thomas's Hospital on Monday, April 12th, aged 75, had retired from practice. Formerly M.O.H. for Edmonton, he practised with success in the City of London. He was exceptionally highly qualified and made useful contributions to our columns and to the *Transactions* of the Pathological Society.

New Maternity Home for Beckenham

At a meeting of the Beckenham borough council recently it was decided to build a new maternity home containing 38 beds at a cost of £40,640.

Falkirk Royal Infirmary

A new nurses' home is needed here and an appeal for £40,000 is to be made. For the first time in the hospital's history an adverse balance is reported, the deficiency on Dec 31st was £757.

Journées Médicales de Bruxelles

This congress will be held in Brussels under the presidency of Prof Albert Dustin from June 19th to 23rd. The speakers will include Sir Joseph Barcroft, F.R.S., Prof D Danielopolu (Bucharest), and Prof F Rathery (Paris). Dr R Beckers, the secretary general, may be addressed at 141, rue Belliard, Brussels.

Greater London Provident Scheme for District Nursing

An inaugural meeting to explain the purpose of this scheme will be held on Monday, April 19th, at 4 p.m., at the Grocers' Hall, Prince's street, E.C. The scheme seeks to provide an organisation self-sufficient and auxiliary to the existing district nursing services in the metropolitan area. Lord Horder and Miss Mercy Wilmshurst, general superintendent of the Queen's Institute of District Nursing, will be among the speakers. The executive committee may be addressed at 1, Sloane-street, S.W.1.

British Empire Cancer Campaign

In the absence of Viscount Hailsham, Sir Cuthbert Wallace, president of the Royal College of Surgeons, presided at the quarterly meeting of the grand council of the British Empire Cancer Campaign held on April 12th. The council was informed that the campaign would move into its new offices at 11, Grosvenor-crecent, next door to the present offices, on May 1st. The following grants, totalling £2900, were made, in addition to the bulk grants of last November and January: £1000 to be placed at the disposal of Mr F Dickens, D.Sc., director of research of the North of England branch of the campaign, at Newcastle, for the continuation of the special "short" wave investigations being carried out under his direction on behalf of the scientific advisory committee at head quarters; £1200 for the purchase of a plaque of radium in use by Dr F G Spear at the Strangeways Research Laboratory, Cambridge, an additional grant of £300 for 1937 to the Westminster Hospital, an additional sum of £300 to Mr F C Pybus for the salaries of his assistants and expenses during the second half of 1937, and a grant of £100 to Mr L H Gray, D.Sc., at Mount Vernon Hospital, in connexion with the neutron investigations.

Sir James Walton was unanimously elected a member of the Council.

Appointments

BARLOW, DONALD M.S. Lond. F.R.C.S. Eng., Hon. Assistant Surgeon to St John's Hospital, Lewisham.
BINNING, REX, B.A. Camb., M.R.C.S. Eng., Anaesthetist to the Royal Alexandra Hospital for Sick Children, Brighton, and to the Brighton and Hove Dental Hospital.
DUNCAN, A.S. M.B. Edin., House Surgeon, Hospital for Sick Children, Great Ormond street.
FRASER, ROBERT M.B. Aberd., D.P.H., Resident Medical Assistant at the City Hospital for Infectious Diseases, Newcastle upon Tyne.
LUMSDEN, A.G. M.B. Aberd., Hon. Assistant Ophthalmic Surgeon to St John's Hospital, Lewisham.
MACLEOD, HENRIETTA M.A. M.B. Lond., Assistant Medical Officer for Maternity and Child Welfare Work for Nottingham.
MCNEILL, JANE L. M.D. Belf., L.M., Medical Officer in the Maternity and Child Welfare Department at Birmingham.
ROBERTS, A.J. L.R.C.P. Lond., House Surgeon to the Evelina Hospital for Sick Children, London.

WALKER, J.V. M.B. Birm., M.R.C.P. Lond., D.P.H., Assistant Medical Officer of Health and Assistant School Medical Officer for Boodle.

WILSON, REGINALD M.D. McGill, D.O.H., House Physician, Hospital for Sick Children, Great Ormond street.

London Hospital.—The following appointments are announced:
GOWAR, F.J. SAMBROOK M.B. Lond., F.R.C.S. Eng., First Assistant to the Department of Thoracic Surgery.

GAVET, C.J. M.D. M.R.C.P. Lond., Paterson Research Scholar and Chief Assistant to the Cardiac Department and

LISTER, ARTHUR, M.B., B.Chir. Camb. F.R.C.S. Eng., First Assistant to the Ophthalmic Department.

Certifying Surgeons under the Factory and Workshop Acts: Dr F.G.A. BECKETT (Ely District Cambs), Dr J.O.S. WELLS (St Mary's Isles of Scilly, District, Cornwall), and Dr C.R. FIELDING (Tarrin District, Cheshire).

Vacancies

For further information refer to the advertisement columns.
Alderley Edge, Ancoats Hosp. Convalescent Home, Great Warford.—Hon. Visiting M.O. £50.
Baghdad, Royal College of Medicine.—Prof. of Pathology and Prof. of Bacteriology, each £150 a month.
Barking Borough.—Asst. M.O. £500.
Barnsley, Beckett Hosp.—Res. Surg. O. £300.
Bath, Royal United Hosp.—H.S. to Ear, Nose, and Throat Dept., at rate of £150.
Beckenham, Bethlem Royal Hosp., Monk's Orchard.—Cons. Surg. Also Radiologist 150 guineas.
Blackburn, Calderstones Certified Institution for Mental Defectives.—Whalley.—Deputy Med. Supt. £750.
Blackburn Royal Infirmary.—Res. H.S. £175.
Bradford, Royal Eye and Ear Hospital.—H.S. £180.
Bristol Mental Hosp.—Fourth Asst. M.O. £500.
British Postgraduate Medical School, Ducane road, W.—Three Part-time Demonstrators in Clinical Medicine each £100.
Canterbury, Kent and Canterbury Hosp.—Hon. Anaesthetist to Ear, Nose, and Throat Dept.
Cheltenham General and Eye Hosps.—H.S. to Eye, Ear, Nose and Throat Dept. £150.
Chester Royal Infirmary.—H.S. £150.
Chesleyfield and North Derbyshire Royal Hosp.—H.S. to Ophthalmic and Ear, Nose, and Throat Depts., at rate of £150.
Connaught Hosp., Wallhampton, E.—Cas. O. at rate of £100.
Croydon and Warwickshire Hosp.—Res. Cas. O. £125.
Coventry, Mayday Hosp.—Asst. Pathologist and Bacteriologist £350. Also two Jun. Res. Asst. M.O.s each £300.
Doncaster Royal Infirmary, and Dispensary.—Cas. H.S. £175.
Eastbourne, Princess Alice Hospital.—Res. H.S. £150.
Edgware, Redhill County Hosp.—Asst. Pathologist, £350.
Edinburgh Royal College of Physicians.—Kirk Duncannon Fellowship for Medical Research, £300.
Edmonton, North Middlesex County Hosp.—Jun. Res. Asst. M.O., at rate of £250.
Elizabeth Garrett Anderson Hosp. Euston road, N.W.—H.S. Asst. Surgeon to Throat, Nose, and Ear Dept. H.S. Physician to Children's Dept. Radiologist £200. Asst. Pathologist for Dept. of Morbid Anatomy, &c. £350.
Exeter City and County.—Temp. Asst. School M.O. and Asst. M.O.H., at rate of £600.
Exeter, Royal Devon and Exeter Hosp.—H.P. and H.S. to Ear, Nose and Throat Dept., each at rate of £150.
Fermanagh County Hosp. Enniskillen.—Surgeon Superintendent, £750.
Grimsby and District Hosp.—Jun. H.S. £150.
Haitax General Hosp.—Jun. Res. M.O. £250.
Hastings, Royal East Sussex Hosp.—Sen. H.S., at rate of £250.
Hertford County Hospital.—Sen. H.S., at rate of £200.
Hosp. for Sick Children, Great Ormond street W.C.—Out-patient Med. Reg. £175.
Hove General Hosp.—Jun. Res. M.O. £120.
Huddersfield Royal Infirmary.—Two H.S.s each at rate of £150.
Hull Royal Infirmary.—H.P. to Sutton Branch, and Second H.P. at rate of £100 and £150 respectively.
Ilford King George Hosp.—H.S., at rate of £100.
Kettering and District General Hosp.—Res. M.O. and Second Res. M.O. at rate of £175 and £125 respectively.
King's College Hosp. S.E. Squint Clinic.—M.O. £80.
L.C.C.—Asst. M.O.s, Grade I £350. Also Asst. M.O.s, Grade II, £250.
Lincoln County Hosp.—Jun. H.S., at rate of £150.
Liverpool and District Hosp. for Diseases of the Heart.—H.P., £110.
London Child Guidance Clinic 1, Canonbury-place, N.—Three Fellowships in Psychiatry each £300.
London Hosp. E.—First Asst. to Gynaecological and Obstet. Dept. £250.
London Jewish Hosp. Stepney Green E.—Hon. Clin. Asst.
London Lock Hosp., 283, Harrow road, W.—Res. M.O. to Men's Depts., at rate of £175.
Macclesfield General Infirmary &c.—Sen. H.S., at rate of £175.
Manchester, Booth Hall Hosp. for Children.—Deputy Med. Supt. £550.
Manchester City.—M.O. for Maternity and Child Welfare £50.
Manchester, Royal Children's Hosp. Pendlebury.—Res. Surg. O. at rate of £150.
Manchester Royal Infirmary.—Jun. Asst. M.O. £350.
Middlesbrough North Riding Infirmary.—Cas. O. £150.
Ministry of Health, Whitehall S.W.—Temp. Serologist, at rate of £850.
Nelson Hosp. Merion S.W.—Res. H.S. at rate of £100.
Newcastle General Hosp.—Res. H.S. £175.

Newcastle-on-Tyne, Wootley Sanatorium near Hazkam—Asst. M.O. £350
 Norwich, Norfolk and Norwich Hoop—H.S. to Spec. Depts., £150
 Nottingham General Dispensary Hyson Green Branch—Res. Surgeon £300
 Nottingham General Hoop—Res. Cas. O and H.S. each at rate of £150
 Oldham, Boundary Park Municipal Hoop—Res. A.M.O. at rate of £200
 Oxford, W'ingfield Morris Orthopaedic Hoop Hemlington—Res. H.S. £100
 Plymouth Prince of Wales's Hoop Devonport—Jun. H.S. at rate of £120
 Prince of Wales's General Hoop A—Hon. Clin. Asst. Princess Louise Kensington Hoop. for Children, St. Quintin Avenue, W—Hon. Radiologist.
 Queen's Hospital for Children, Hackney road E—H.S. at rate of £100
 Radcliffe Institute, Riding House-street W—Res. M.O. at rate of £350
 Royal Chert Hoop City-road, E.C.—Res. M.O. at rate of £150
 Also H.P. at rate of £100
 Royal Free Hoop Gray's Inn road W—Asst. Physician to Dept. of Physical Medicine Also First Asst. in Children's Dept., at rate of £100
 Royal London Ophthalmic Hoop City-road E.C.—Out-patient Officer £100
 Royal Naval Medical Services—M.O.'s
 St. Helen's and Mid. Mersey Hoop—Res. H.S. £150
 St. Helen's, County Borough—Asst. M.O. H. £500
 St. Thomas's Hoop, S.E.—Asst. Pathologist £450
 Salisbury General Infirmary—H.P. at rate of £135
 Seamen's Christian Friend Society Hospital Trust—Asst. Med. Sup't. for Hoop in Mediterranean
 Sheffield Children's Hospital—H.S. at rate of £100
 Sheffield Royal Hoop—H.S. to Ear Nose and Throat Dept. at rate of £80
 Shrewsbury Royal Salop Infirmary—Res. H.P. at rate of £160
 Shrewsbury Royal Staffordshire Royal Infirmary—Hon. Anesthetist
 Stourbridge Worsley Public Assistance Institution—Res. Asst. M.O. £250
 Sunderland Royal Infirmary—Two H.S.'s, each £180
 Swansea, Adelphi Public Hoop—H.P. at rate of £150
 Swansea County Borough Mental Hoop—Asst. M.O. £350
 Swansea General and Eye Hoop—Cas. O at rate of £160-£175
 Tarncliffe and Somerset Hoop—H.S. at rate of £100
 Tulsehills Wells East and Sussex Hoop—H.S. to Ear Nose and Throat and Ophth. Depts., £150
 Victoria Hoop for Children, Tulsehills S.W.—Cas. O at rate of £200
 Walkley General Hoop—H.P. and Res. Asst. Pathologist at rate of £150
 West End Hoop for Nervous Diseases 73 Welbeck-street W—Hon. Psychotherapist. Also Hon. Clin. Asst. for Out-patient Dept.
 Westminster Hoop Broad Sanctuary S.W.—Asst. M.O. in X-ray and Electrical Dept.
 Whitechapel Clinic Turner-street E—Asst. Pathologist £500
 Wottonhampton, Ave Cross Hoop—Res. Asst. M.O. £200
 Woodwich and District War Memorial Hoop, Shooter's Hill, S.E.—H.P. and H.S. each at rate of £100
 Worcester Royal Infirmary—H.S. to Gynaecological Dept. £140
 Also Locum Jun. H.S. £25 a week
 York County Hoop—H.S. to Ear Nose and Throat Dept. £150
 York Dispensary—Res. M.O. £175
 The Chief Inspector of Factories announces vacancies for Consulting Factory Surgeons at Youlgreave (Derbyshire) and Pauldham (West Lothian)

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1 Wimpole-street W
 TUESDAY, April 20th.
 General Meeting of Fellows, 5.30 P.M. Ballot for election to the Fellowship

THURSDAY
 Neurology 5.30 P.M. Pathological Meeting
 Urology 10 A.M. Annual General Meeting Mr. Clifford Morgan The Harris Operation and its Modifications
 11.30 A.M. Mr. Kenneth Walker Trans-urethral Operations on the Prostate Gland—5.30 P.M. Demonstration of museum specimens and report of experimental urinary work at the Royal College of Surgeons

FRIDAY
 Urology 10.15 A.M. Mr. John Thompson Walker: The Bladder in Spinal Injuries in War. Prof. G. Grey Turner: The Place of Surgery in the Undescended Testis. 5.30 P.M. Operations and demonstrations at All Saints' Hospital, St. Paul's Hospital, St. Peter's Hospital, Middlesex Hospital and King's College Hospital.

Diseases in Children 5 P.M. (Closed at 4.30 P.M.) Cases which have previously appeared before the section will be shown

MEDICO LEGAL SOCIETY

THURSDAY, April 2nd—5.30 P.M. (6 Portland place W.) Dr. G. Roche Lynch Dr. D. Harley and Mr. D. Harcourt Kitchin The Medico-legal Importance of the Blood Groups with Special Reference to Non-paternity

CHELSEA CLINICAL SOCIETY

TUESDAY, April 20th.—4.30 P.M. (Hotel Rembrandt, Thurloe-place S.W.) Mr. E. Rock Carling The Doctor and His Dependents.

LECTURES, ADDRESSES DEMONSTRATIONS &c.

UNIVERSITY OF BIRMINGHAM

THURSDAY, April 22nd.—4 P.M. Prof. W. N. Haworth D.Sc., F.R.S. The Chemistry of the Carbohydrates: Ascorbic Acid and other Water-soluble Vitamins (William Withering lectures.)

BRITISH POSTGRADUATE MEDICAL SCHOOL Ducau road W

MONDAY, April 19th.—2.30 P.M. Dr. C. W. Buckley Arthritis

WEDNESDAY—2.30 P.M. Dr. J. Vaughan Sedimentation rate, 3 P.M. clinical and pathological conference (surgical) 4 P.M. Mr. J. E. H. Roberts Surgery of the Chest 4.30 P.M. Dr. W. E. Gyo: Experimental Cancer Research.

THURSDAY—Noon clinical and pathological conference (obstetrical and gynaecological) 3.30 P.M. Dr. Duncan White Radiological Demonstration 3.30 P.M. Mr. A. R. H. M. Jones: The Chemistry of the Cancer of Surgical Exposure 3.30 P.M. Mr. Malcolm Donaldson Radiation Therapy in Gynaecology

FRIDAY—2 P.M. operative obstetrics, 3 P.M. clinical and pathological conference (medical)

Daily 10 to 4 P.M. medical clinics surgical clinics and operations obstetrical and gynaecological clinics and operations.

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE Hammersmith W

MONDAY, April 19th.—10 A.M. Dr. Post A. Ray Film Demonstration skin clinic 11 A.M. surgical wards P.M. operations surgical and gynaecological wards medical surgical and gynaecological clinics 4.15 P.M. Mr. Green Armynote Endometrioma.

TUESDAY—10 A.M. medical wards 11 A.M. surgical wards 3 P.M. operations medical, surgical and throat clinics 4.15 P.M. Mr. Wood Walker Adhesions around Joints

WEDNESDAY—10 A.M. children's ward and clinic 11 A.M. medical wards 3 P.M. gynaecological operations medical surgical and eye clinics 4.15 P.M. Mr. Healer Pre-anesthetic Medication

THURSDAY—10 A.M. neurological and gynaecological clinics Noon fractured ribs and spine, operation medical surgical and genito-urinary and eye clinics

FRIDAY—10 A.M. medical wards skin clinic Noon lecture on treatment, 3 P.M. operations medical surgical and throat clinics

SATURDAY—10 A.M. children's and surgical clinic 11 A.M. medical wards

The lectures at 4.15 P.M. are open to all medical practitioners without fee.

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole-street W

MONDAY, April 19th to SUNDAY, April 24th.—WEST END HOSPITAL FOR NERVOUS DISEASES Welbeck-street W All-day course in neurology—INSTANT HOSPITAL Vincent-square S.W. Eat and Sun course in infantile diseases—ROYAL CANCER HOSPITAL Fulham road S.W. See and Sun course in Cancer

Courses are open only to members of the Fellowship

TAVERSTOCK CLINIC Market place W

TUESDAY, April 20th.—5.30 P.M. Prof. E. Kretschmer: Heredity and Constitution in the Aetiology of Psychotic Disorders

WEDNESDAY—5.30 P.M. Prof. Kretschmer: The Structure of the Personality in relation to Psychotherapy

THURSDAY—5.30 P.M. Prof. Kretschmer: Instinct and Hysteria

NATIONAL HOSPITAL FOR DISEASES OF THE HEART Westminster W

TUESDAY, April 20th.—5.30 P.M. Dr. B. T. Parsons Smith Right Heart Failure

HOSPITAL FOR SICK CHILDREN Great Ormond-street W

THURSDAY, April 22nd.—5 P.M. Mr. Lancelot Barrington Ward: Developmental Abnormalities of the Mesenteric and Gut 3 P.M. Dr. Bertram Fibers Radiographic Appearances in Rickets, Marrow &c.

Out-patient Clinics daily at 10 A.M. and Ward VI Heat P.M.

ST. JOHN'S CLINIC AND INSTITUTE OF PHYSICAL MEDICINE, 115 Finsbury-lane E.C.2

FRIDAY, April 23rd.—3.30 P.M. (St. Stephen's Hospital) Demonstration of various methods of physical treatment

MANCHESTER ROYAL INFIRMARY

TUESDAY, April 20th.—1.15 P.M. Mr. Geoffrey Jefferson: Surgery of Intracranial Aneurysms

FRIDAY—1.15 P.M. Dr. Crichton Brownwell: Demonstration of Medical Cases.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION

WESTERN INFIRMARY, April 21st.—4.15 P.M. (Western Infirmary) Dr. G. Macgregor-Robertson: Venereal Disease in Men.

NOTES, COMMENTS, AND ABSTRACTS

BLOOD PRESSURE AMONGST ABORIGINAL
ETHNIC GROUPS OF SZECHWAN
PROVINCE, WEST CHINA

By W R MORSE, M D McGill, LL D, F A C S

DIRECTOR OF THE COLLEGE OF MEDICINE AND DENTISTRY AND
HEAD OF THE DEPARTMENT OF ANATOMY, UNION
UNIVERSITY CHENG TU WEST CHINA AND

Y T BEH, M D

INSTRUCTOR IN ANATOMY AT THE UNIVERSITY

The blood pressure plays an important part in anthropology in relation to heredity, environment, social life, diet, attitude, stress and strain of ethnic groups. Publications dealing with the blood pressure of little known and isolated ethnic groups are probably not very extensive. Here is a report on three such groups, the Chwan Miao, the Ta Hwa Miao, and Noso (Lolo).

Ten expeditions* have been made by the senior author amongst the aboriginal ethnic groups of the borderlands of the above province to secure anthropological data. The blood pressure of the Chwan Miao was taken by Y T Beh and that of the Ta Hwa Miao and the Noso by Dr L G Kilborn, professor of

Miao chiefly in Yunnan and Kweichow, the Noso in Szechwan, Yunnan, and Kweichow.

Method—A Nicholson's mercury, or a Tyco's sphygmomanometer was used. The subjects were seated facing the experimenter, and a 12 cm cuff was applied to the right arm of the subject. The pressure in the cuff was raised until all sounds had disappeared, and then as the pressure in the system was lowered the first point at which sounds reappeared was recorded as the systolic blood pressure. As the pressure was still further lowered the point at which the clear sounds suddenly changed to dull and muffled ones (so called fourth point) was recorded as the diastolic pressure. Readings were made at various times of the day as they had to be taken whenever the subjects were available.

The recording of the blood pressure was but one item in a series of complete anthropological measurements carried out by members of our expedition into the Miao country.

The results on the Chwan Miao are set out in Table I.

Table II shows the results on the Ta Hwa Miao and the results on the Noso (Lolo) are given in Table III.

TABLE I
Blood Pressure of the Chwan Miao

Age group	Number examined	Systolic pressure			Diastolic pressure			Pulse pressure		
		Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
16-20	3	103.5	110	94	69.7	81	58	32.3	30	30
21-25	35	111.9	130	90	71.4	81	54	41.9	61	22
26-30	34	108.1	130	90	69.7	91	50	39.2	65	20
31-35	13	106.2	120	89	71.0	90	55	37.5	55	20
36-40	21	107.3	128	86	71.1	85	60	37.0	59	20
41-45	15	107.9	120	92	72.1	81	40	40.6	62	25
46-50	10	107.1	130	86	74.7	81	60	37.2	61	18
51-55	4	110.5	120	116	77.5	80	70	42.0	50	28
56-60	1	113.0	140	100	73.8	92	65	39.8	48	35
61-65	2	106.5	108	105	70.0	80	50	36.5	38	35
66-70	1	110.0	130	102	72.0	78	66	44.0	52	30
Total	143									
Aver		109.7			72.1			38.0		

Systolic pressure	Diastolic pressure	Pulse pressure
Number 140	Number 140	Number 140
Range 85-140	Range 40-93	Range 18-65
Age 21-70	Age 21-70	Age 21-70
$\bar{M} = 107.37 \pm 0.59$	$\bar{M} = 70.56 \pm 0.45$	$\bar{M} = 37.84 \pm 0.58$
$\sigma = 10.37 \pm 0.43$	$\sigma = 7.89 \pm 0.32$	$\sigma = 10.15 \pm 0.41$
$V = 9.07 \pm 0.30$	$V = 11.18 \pm 0.45$	$V = 26.82 \pm 1.08$

physiology. Physical anthropological measurements and observations were made on the above groups. Photographs were taken but in only one group (the Chwan Miao) do the photographs indicate the individuals on whom the blood pressure and the other anthropological measurements and observations were taken.

All of these aboriginal groups are relegated by the pressure of the Chinese to the fastnesses of the mountains of the provinces. The Chwan Miao are found in Szechwan and Kweichow, the Ta Hwa

TABLE II
Blood Pressure of the Ta Hwa Miao

Age group	Number examined	Systolic pressure			Diastolic pressure			Pulse pressure		
		Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
16-20	17	108	124	78	70	90	40	38	59	35
21-25	26	106	122	92	68	87	54	37	58	44
26-30	22	109	134	82	76	88	64	35	52	41
31-35	21	106	123	92	70	90	60	36	56	40
36-40	23	103	122	85	72	82	68	32	44	35
41-45	12	100	114	86	71	83	58	29	38	15
46-50	16	99	118	78	68	90	55	30	47	12
51-70	14	100	108	78	73	75	52	32	42	21
Total	150									
Aver		104			70			34		

TABLE III
Blood Pressure of the Noso

Age group	Number examined	Systolic pressure	Diastolic pressure	Pulse pressure
16-20	6	98.6	106	90
21-25	33	104.7	128	90
26-30	26	107.7	124	86
31-35	0	102.7	130	80
36-40	14	101.8	118	90
41-45	6	106.3	123	97
46-50	4	106.2	127	90
51-60	6	99.6	122	78
61	1	118.0		72.0
Total	103			
Aver		104.5		72.8

The blood pressure of these three groups is uniformly low, the Chwan Miao being somewhat the highest. There is no tendency towards an increase in the blood pressure with age.

All these people live in the mountains above sea level, the Chwan Miao at or about 3000 ft, the Ta Hwa Miao at 7-9000 ft, and the Noso at 5-10,000 ft. They all live in a fairly rigorous climatic environment not subject to extremes of temperature. The location of these groups is approximately Lat 28°-31° N and Long 100°-104° E, this section being in parts of Szechwan, Yunnan, and Kweichow provinces. None of these groups live in villages or cities but they are scattered about the countryside. They are agricultural and pastoral people, some are hunters.

In all cases the chief diet of these mountaineers is corn and not too abundant in amount, the Chwan

* These ten expeditions embraced the following groups—viz Tibetan Chlang, Gila Rong, Noso (Lolo) Black and White Bonce, Hsi Kan, Bo Lo Tsi, Ta Hwa Miao, Chwan Miao and Chang Chiao. Of these groups some 1206 individuals have been measured and observed but the statistical results have not been fully worked out.

Miao eat some rice. Meat is not used as a general diet, being almost entirely limited to wedding funerals and celebrations. Milk butter and cheese are not used in either group. Vegetables are sparingly eaten. They live on a restricted low diet. The sexual life of the Miao groups is rather free amongst themselves except the Christians. The Noso are not sexually free.

These groups are relatively isolated from the Chinese especially the Independent Noso of Szechwan. The Miao groups are not so isolated. They are living where might is right. All have been and the Noso now are very antagonistic with the Chinese. The Miao formerly very warlike are now subdued. The Ta Hwa Miao are practically *serfs* of the Noso.

SUMMARY

This paper reports the blood pressure of three ethnic groups as follows —

TABLE IV

Group.	Number	Age.	Systolic pressure.	Diastolic pressure.	Pulse pressure
			Mean	Mean	Mean.
Chwan Miao	143	10-70	109.7	72.1	38.0
Ta Hwa Miao	150	16-70	104.0	66.0	34.0
Noso (Lolo)	105	16-64	104.5	72.8	31.7

The blood pressure of the Noso and Ta Hwa Miao does not increase with age and the Chwan Miao only slightly so.

REFERENCES

- KILLBURN, L. G. (1933) Blood Pressure of a Primitive Race. *China med. J. Suppl. March*, pp. 20-24.
 — (1933) A Note on the Blood Pressure of a Primitive Race with special reference to the Miao of Szechwan. *China J. Physiol.*

AIR RAID PRECAUTIONS AT PUBLIC SCHOOLS

MEMBERS of the Medical Officers of Schools Association met together on April 9th, under the presidency of Dr J. LAMBERT to hear an address from Dr STUART BLACKMORE, of the air raid precautions department of the Home Office. Dr Blackmore put before them the problem set by air attack and asked for suggestions as to how it should be solved by those in charge of schools. Of the three kinds of missile to be expected the first the high-explosive bomb was so powerful that the effects of a direct hit might be left out of account in devising preventive measures. The damage done by splintering and by the pulse-wave following the explosion could however be minimised. The gravest danger was from the incendiary bomb which produced a temperature of 2000 C. and was inextinguishable. From the fire-fighting point of view it would be useless to direct energy to using water or chemicals on the point of contact or the bomb, and they must be employed on the surroundings to limit the extent of the fire. Dr Blackmore placed the gas bomb last because it was the least dangerous of the three forms of air attack. If only the mass of the people could be given the necessary minimum of instruction and training. Gas if used against an unprotected and ignorant populace was absolutely devastating both in producing casualties and in ruining morale; but against an instructed mass of people its effects were less to be feared than those of the high explosive and the incendiary bomb.

It was agreed that each public school should make suggestions suitable to its own circumstances and situation.

PROTECTION OF MOTHERS AND CHILDREN IN RUSSIA

BEFORE the war infant mortality in Russia was about 270 per 1000 live births, and in 1911 a third of all deaths in Moscow were estimated to be among children under five. Immediately after the Revolution a department for the protection of motherhood and infancy was set up and the comprehensive service it has instituted is described and illustrated in a book entitled *Nursery School and Parent Education in Soviet Russia*.¹ According to the authors, the State takes entire responsibility for protecting its women and children and though at present the standard varies greatly between towns and country districts, the ultimate aim is to provide adequate intelligent care in nursery institutions for every young child in the Union. A woman engaged in physical work is now entitled to eight weeks leave before and eight weeks after confinement with full wages, and the nursing mother may take half an hour after every three and a half hours of work to feed and attend to her baby. Consultation centres cater both for mothers and children and the doctor in charge of a centre is held responsible for certain streets where he must visit any infants who are seriously ill besides those suffering from infectious illness. Creches are of different types according to the mother's occupation. A factory worker takes her baby to the creche attached to her place of work to remain there as long as she is on duty. Many women are employed on collective farms and summer travelling creches follow them round from place to place the babies being kept for as many as eighteen hours a day when necessary. Travelling in Russia is notoriously slow but it is enlivened for mothers and infants by the establishment of special rooms with nursery equipment at the larger railway stations. A mother with a child is expected and encouraged to break into the queue when waiting to take tickets and on some trains special coaches for mothers and children are provided.

Nursery schools only cater for children up to the age of four but they have a strong political bias. An account of one school shows babies of fourteen months playing in a room with a portrait of Lenin for their inspiration; from infancy the air of education is collectivism teachers being instructed to think out every part of the apparatus and play material in the light of the educational goals of the State. Furniture and equipment are carefully designed and the toys are exceptionally good many being made by peasants from the simplest materials. Probably at times both teachers and children forget that their institution is a principal weapon in the struggle for socialism in the nursery field and play like anybody else just for the fun of the thing.

Education of parents is carried on by parent teacher meetings, by exhibitions temporary and permanent by literature and posters. Research departments are working in Moscow and Leningrad studying both normal and abnormal children under three years of age and special attention is devoted to the training of deaf and dumb children.

E MERCK'S JUBILEE REPORT

It was in January 1897, that the chemical works of E. Merck in Darmstadt began to issue a summary of short and useful information about new pharmaceutical preparations for the use of doctors and pharmacists. It was not the firm's first venture of the kind because Heinrich Emanuel Merck (1791-1850) whose portrait is attached to the jubilee issue now before us had already embarked on a serial entitled *A Cabinet of Novelties* and had collaborated with Lillie, Trommsdorff and Meier.

¹ By Vera Fedayev Ly. Formerly Senior Scientific Worker of the Central Institute for the Protection of Motherhood and Infancy in collaboration with Betty Smith Hill, Ph.D. Emeritus of Education, Columbia University, New York. London: H. K. Lewis, Paul, Treves, Trubner and Co. Ltd. 1936. Pp. 263. 10s. 6d.

in the *Annals of Pharmacv*. For half a century the *Jahresbericht* has appeared, giving what its editor regards as the "really important" in the pharmaceutical year. The report has contained original articles from the firm's own laboratories and often contributions from outside authors, of which one of the earliest was J. v. Merz's "Physiological and Therapeutic Investigations on the Action of some Morphine Derivatives." The present volume is prefaced by congratulatory notes from directors of pharmacological institutes all over the world including Heubner (Berlin), Tschirch (Bern), Krehl (Heidelberg), Hansen (Oslo), Aschoff (Freiburg), Marinresco (Bucharest), Eppinger (Vienna), Barger (Edinburgh), Cesa-Bianchi (Milan), Tsi-Lung (Shanghai), Crocco (Buenos Aires), Lebeau and Tiffeneau (Paris). The next 170 pages contain original contributions dealing for the most part with hormones, vitamins, and the newer alkaloids, leaving 120 pages for brief summaries of some 600 preparations and drugs, with precise references to the literature. Merck has not been unmindful of foreign readers, for French, Russian, Spanish, and English editions of their annual report have appeared for many years. A general index of all 50 numbers is promised in the near future.

PALLIATIVE TREATMENT OF CANCER

A PLEA for a different mental attitude towards methods of treating cancer is made by Dr. B. R. Shore.¹ His thesis is that to prolong life with the greatest possible measure of physical and mental comfort is the goal in treating all chronic non-infectious diseases, including cancer. Shore holds that the modern practice of classifying treated cases of malignant disease as three-, five-, or ten-year "cures" is unfair to existing therapeutic methods which should also be credited with the vast measure of physical and mental relief afforded to patients who do not survive long enough to fall within any category of "cure." The biology of any given cancer and of the patient suffering from it are two unknown quantities, no patient is too ill for therapy in some form and the prognosis is often quite uncertain. To illustrate his point the author quotes six cases of apparently inoperable carcinoma of breast on whom palliative mastectomy followed by radiation was done. Three of the six are still alive without recurrence 8 years later, one died of recurrence after 7 years and another after 6 years, and one died of heart disease 7 years after operation. The importance of histological diagnosis in cases of cancer is emphasised. It is a counsel of perfection that biopsy specimens should be of adequate size and taken from representative portions of the growth by gentle surgical means. Gynecologists might ask whether curettings from a case of suspected carcinoma of the body of the uterus may be regarded as adequate biological material, it would be difficult to obtain larger portions of material in such cases without resorting to laparotomy. A disturbing fact disclosed by an investigation of 744 consecutive cancer cases admitted to St. Luke's Hospital, New York, to which Dr. Shore is attached was that only 21.4 per cent were radically operable. In a group of 255 private patients, 53 per cent were radically operable, a proportion considerably higher though still falling far short of perfection. Making due allowance for other factors, the conclusion is reached that cancer is detected earlier among the better-to-do patients. This is what one would expect

Prof. A. E. NAISH writes: "My attention has been called to recent articles in the provincial press in which it is stated that a research group is working at Sheffield University under my direction investigating the treatment of haemophilia. I wish to state most emphatically that these articles have been published without my knowledge, and that, although I have been associated with the work, it is not being done under my direction."

¹ *Ann. Surg.* March 1937, p. 442.

Births, Marriages, and Deaths

BIRTHS

- BEVAN.—On April 9th at Devonshire place W., the wife of Dr. Charles E. Bevan, Colonial Medical Service Cyprus of a son.
- GRANT NICOL.—On April 8th at Wimbledon, the wife of Dr. O. Grant Nicol of a daughter.
- LIST.—On March 31st the wife of Dr. H. M. List, of Rochdale of a son.
- McKIBBIN.—On April 9th at Blackheath the wife of Major F. McKibbin, R.A.M.C., of a son.
- NEWTON PRICE.—On April 11th, at Hove, the wife of Dr. E. Newton Price of a son.
- O'CONNOR.—On April 8th the wife of Dr. W. J. O'Connor High Wycombe of a daughter.
- PATERSON.—On April 4th at Portsmouth the wife of Dr. Gerald Paterson, of a daughter.
- PORTER.—On April 7th, at Faversham the wife of Dr. T. W. Herdman Porter of a son.
- THURSTON.—On April 8th, the wife of Dr. Gavin Thurston, of Clapham Common of a son.
- WATERS.—On April 6th the wife of Captain H. S. Waters, I.M.S. Presidency Surgeon Bombay, of a daughter.
- WHITE.—On April 13th at Belsize Park gardens, N.W., to Sylvia wife of Norman White F.R.C.S.—a son.
- WRIGLEY.—On April 8th at Hamilton terrace N.W., the wife of Arthur Joseph Wrigley M.D. Lond. F.R.C.S. Eng., of a son.

MARRIAGES

- GREGGIERSON—CAMPBELL.—On April 10th at Christ Church Westminster, Dr. Gerald J. Greggier of Adelaide S. Australia, to Sheila elder daughter of Mr. and Mrs. W. R. Campbell of Sydney N.S.W.
- WHITFIELD—DENCE.—On April 3rd at St. Mark's Church, Torquay, George J. Newbold Whitfield, of Sunderland, to Audrey Priscilla Dence M.B. Lond., daughter of the late Rev. A. T. Dence formerly of Abbotskerswell and Mrs. Dence Torquay.

DEATHS

- BURTON.—On April 6th, at Clifton-court N.W., Alfred Henry Burton M.D. of Laxfield House Suffolk aged 84.
- GUTHRIE.—On April 13th at Wimbledon Robert Lyall Guthrie O.B.E., M.D. C.M. Edin. Lt. Col. R.A.M.C. (T), Barrister-at-Law, Coroner Eastern District County of London.
- JACKSON.—On April 5th John Luke Jackson M.B. B.Ch. Edin., son of the late Rev. John Jackson D.D. Ballycastle.
- LEAK.—On April 10th at Winsford, Cheshire Hector Leak M.R.C.S. Eng. in his 81st year.
- MURPHY.—On April 6th at Liphook, Hants, William Murphy M.B. Edin. in his 83rd year.
- PECK.—On April 6th at Bridgnorth Salop, Awdry Peck M.A. Oxon. M.R.C.S. Eng. aged 89.
- SMART.—On April 7th at Liverpool David Smart M.B. Edin. V.D. Colonel A.M.S.T., for 36 years Medical Officer in charge Smithdown road Hospital, Liverpool.
- TIGHE.—On April 4th, at Castlerock Co. Roscommon Ireland J. W. Tighe L.R.C.P.I. & L.M. Surgeon Commander Royal Navy (ret'd.) only son of Dr. J. M. Tighe and the late Mrs. Tighe of Melbourne.
- TURNBULL.—On April 11th at Southsea following an operation Surgeon Captain Hugh Prideaux Turnbull, R.N. (ret'd.) of Emsworth.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

A CONFERENCE ON PROSTITUTION.—The French Government has introduced a Bill to abolish *maisons tolérées* and to organise the fight against venereal diseases. The International Abolitionist Federation is taking the opportunity to organise an international congress in Paris from May 20th to 22nd. The problems of prostitution and venereal disease will be studied during this congress from three points of view—legal, medical, and moral. Dr. Veldhuyzen, director of the Wilhelmina Hospital at Amsterdam, who will open the discussion on the medical aspect, will describe the progress in treating venereal diseases and explain why voluntary methods of treatment have proved more successful than compulsory methods. Miss Alison Neilans, general secretary of the Association for Moral and Social Hygiene, will deal with the effect of regulation on morality, youth, and the women concerned. Information about the congress may be had from the Secretariat of the Federation, 8 rue de l'Hôtel-de-Ville, Geneva.

ADDRESSES AND ORIGINAL ARTICLES

THE PREVENTION OF PULMONARY TUBERCULOSIS AMONG ADULTS IN ENGLAND IN THE PAST AND IN THE FUTURE *

By P. M. D. AROY HART M.D. Camb. F.R.C.P. Lond.
ASSISTANT PHYSICIAN TO UNIVERSITY COLLEGE
HOSPITAL, LONDON

IN 1870 Dr Milroy the founder of this lectureship wrote as follows of a group of diseases that included tuberculosis: No question of public hygiene is perhaps of more importance in respect alike of individual suffering and of the welfare of communities than the *Ætiology* of the chronic Cachexia.

In spite of the discovery of the tubercle bacillus by Koch three years later it is clear that pulmonary tuberculosis is still one of the major problems of medicine. Thus at the present time it is responsible for the deaths of about 25 000 persons annually in England and Wales alone, a figure that amounts to about 5 per cent of deaths from all causes. Among young men and women of 15-24 it causes more deaths than any other single disease. Indeed its death rate at that age is about two-thirds of that of all other diseases taken together. It is also costly in money: for in 1933-34 the local authorities of England and Wales spent on their tuberculosis services nearly £4 000 000, or 7 per cent. of their total expenditure under the heading of public health (Ministry of Health 1935-36). This sum represents about 2s. per head of the population of the country.

Tuberculosis therefore, still presents a health problem of great medical and economic importance. I shall try to show that in the future as in the past success in its solution is most likely to be attained by measures of prevention. The term preventive will be used here in a broad sense to comprise all remedial measures other than the actual technique of treatment. Thus it will cover the prevention of progressive lesions after infection has taken place, the prevention of further advance in such lesions after their presence has been recognised, and the prevention of their breakdown after the stage of regression is attained.

The age of 15 will be taken as the dividing line between the child and the adult, because it is at this age that in England most members of the working class enter the labour market suffering a radical change in their mode of living.

Two types of pulmonary tuberculosis will be recognised as occurring in the adult though a hard and fast separation between the two may in time prove to be unjustified.

1 The first and less common type may accompany first infection—with its change from negative to positive tuberculin reactivity—when this process takes place in adult life instead of as is more common in urbanised communities in childhood. The lesions take the form of pulmonary infiltrations around the primary focus (which may occur in any part of the lung) enlarged tracheo-bronchial glands, pleurisy, erythema nodosum &c. Because these lesions are of the kind sometimes associated with first infection received in childhood the term *child hood type of tuberculosis* is often applied to them also in the adult.

2 The second type is much the more common in this country and is usually known as the *adult type*. Its progressive lesions are due to it is usually held to the extension of a reinfection process that occurs peculiarly in the apical or subapical region of the lungs of persons already first-infected.

Many aspects of these two types of pulmonary lesions remain obscure (for different views of pathogenesis see Ople 1935 Blacklock 1936 Pagel 1936). Nevertheless additions to knowledge during the past two decades permit us to indicate fresh lines of activity in the field of prevention of pulmonary tuberculosis among adults.

Social Preventive Measures Applicable to the Community

FACTORS RESPONSIBLE FOR THE TREND OF PULMONARY TUBERCULOSIS IN ENGLAND

Mortality figures, which provide the most complete available estimate of the past trend of pulmonary tuberculosis showed a satisfactory decline in all age-groups in England from the middle of the last century until the beginning of the present one. Latterly however although the figures for most age groups have continued their downward course except during the late war the mortality in young adults (aged 15-24) more especially in young women has shown a less rapid decline. Thus for young women the mortality in 1930-32 was only 4 per cent. lower than in 1911 as against a reduction of 30 per cent. for women aged 25-44. There is reason to think that the situation is now again improving but this is still uncertain.

A decline in mortality from any disease may result either from a decrease in its morbidity or from a fall in its case fatality. Comparison of mortality and morbidity figures for pulmonary tuberculosis since 1923 shows an approximate parallelism between the two (see Ministry of Health 1935a). If this can be assumed to be true also of earlier periods we arrive at the important conclusion that the decline in mortality is probably due to the decrease in incidence of new cases rather than to a reduction in the case fatality.

It is now widely accepted that the general decline in pulmonary tuberculosis has been mainly the result of improvement in the general social and economic conditions of the mass of the people. Although specific antituberculosis measures might be expected to have played an important part in the reduction it is hard to determine the extent of their contribution at least in the case of adults. For the general decline in mortality from pulmonary tuberculosis began in this country before any specific measures were taken against the disease, and has been accompanied by a substantial decline in mortality from all other diseases taken together. On the other hand, the recent check in the reduction of pulmonary tuberculosis mortality among young adults—a check that was not shared by the mortality from other diseases—has occurred during a period when interest in matters of public health in general has been greater than ever.

This serious check in the decline of tuberculosis mortality among one of the economically most important groups of the population has naturally attracted much attention and it seems of great consequence to establish the factors responsible. The following is a resumé of certain parts of work in preparation by Payling Wright and myself.

Stocks (1936) rightly points out that one must consider not only the retarded decline in the country as a whole, but also the differences in decline experienced from one locality to another. He attributes the general retardation in the age group 15-24 to the after-effects of war time privations. But though such privations readily account for the temporary rise in tuberculosis mortality both among child and adult civilians while the war was in progress, they cannot be accepted as a complete explanation, since in young females, at any rate, the check in decline in mortality began some years before 1914. To explain the local differences in mortality decline, internal migration of young adults in search of better economic conditions has been advanced as an important factor by Bradford Hill (1936), these migrants being, he believes, less likely than non migrants to develop pulmonary tuberculosis. This belief in the superior health of migrants in recent years may be disputed, and even if correct, migration will only partly account for the local differential fall in mortality, as indeed Bradford Hill himself is ready to admit.

It seems possible, in our view, to ascribe both the decline in the country as a whole and the local differences to the reaction upon health of associated social conditions, to which, it is suggested, young adults are especially sensitive.

IMPORTANCE OF VARIOUS SOCIAL FACTORS IN PULMONARY TUBERCULOSIS

(1) *Nutrition and housing*—If it is true that the trend of pulmonary tuberculosis has hitherto been mainly the result of social measures not especially directed to this disease, which social factors are of major importance? According to current belief these are housing, nutrition, and fatigue, and clothing, heating, and hygiene.

Housing conditions affect the frequency and intimacy of personal contact, and consequently the spacing and dosage of droplet infection. They may also perhaps influence individual resistance. It is doubtful if either nutrition or fatigue has any influence upon the actual occurrence of tuberculous infection, which is predominantly the result of contact. On the other hand, they probably affect the course of the tuberculous process once infection has taken place.

It is difficult to separate the importance of these various individual social factors because, being to a large extent determined by income, they are usually correlated with one another. On Tyneside Bradbury (1933) found a relationship between tuberculosis and both overcrowding and undernourishment (as judged by deficient dietary) and concluded that both these social factors are important as causes in tuberculosis. This agrees with the high degree of correlation found between overcrowding and adult pulmonary tuberculosis mortality in different localities—e.g. by Hart and Wright for English county boroughs. The separate importance of undernutrition agrees with the clinical observation that adequate diet is important in treatment of the disease, and also with the striking evidence of the effects of food shortage on tuberculosis mortality that was provided by the late war.

The rise in tuberculosis mortality then seen involved not only belligerent countries but also some neutral states affected by food shortage. In England and Wales the total civilian deaths from tuberculosis during the years 1914-18 were 18,000 more than would have occurred had the death rate continued at the same figure as in 1914. But the worst effects were seen in Germany and Austria where the qualitative and quantitative reductions in food allowance were the most extreme. It has been estimated that Germany lost an extra 230,000 civilian lives from tuberculosis as a result of the war and subsequent economic depression (1914-27) this works out as one person for every ten fatal military casualties.

While the main cause of the war rise is generally believed to have been the shortage of food, the employment of large numbers of persons in injurious trades, and overcrowding due to shortage of fuel, may also have played a subsidiary part (see Beveridge 1928, Memorandum 1936).

If, as seems probable, deficiencies in housing and in nutrition predispose to pulmonary tuberculosis, it is desirable to consider the present position of the country with regard to each of them.

(2) *Deficiencies in nutrition and possible remedies*—It is still unknown whether shortage of any particular food factor encourages tuberculosis. Out of the polemics that have surrounded the subject of nutrition, however, is emerging a rather new conception which may be of great importance in our future attitude towards the prevention of tuberculosis. According to this conception, a diet sufficient for optimal health should be aimed at in order to maintain physique and prevent disease (see Orr 1936, p. 12). While the composition of such an optimal diet cannot yet be stated with complete certainty, enough is known of the particular functions of individual food stuffs apart from their energy value to be sure that it exceeds, both in quantity and in quality, the diet previously regarded as adequate for minimal health—i.e. to prevent actual starvation or malnutrition in the older sense.

The main direct evidence for the existence of suboptimal nutrition has been provided by dietary or feeding experiments in school children and adolescents (e.g., Cory Mann 1926, Orr 1928, Orr and Clark 1930, Leighton and McKinlay 1930, Friend 1935). These investigations are supported by the beneficial results of administering a liberal diet to substandard army recruits for short periods (see Duff Cooper 1937). These latter results are of particular interest since the subjects are drawn from the age group whose tuberculosis incidence has been given rise to especial anxiety in recent years.

Inquiries into working-class dietaries in selected population groups provide information from another angle on the prevalence of suboptimal nutrition. In some instances individual dietaries have been assessed (Cathcart and Murray 1936, Newcastle-on-Tyne 1937), while in others group-averages of dietaries in relation to income have been used—a procedure that involves certain assumptions (e.g., Orr 1936). Most of the investigators have found their groups under examination to contain many persons who are consuming diets which cannot be fairly accepted as up to any reasonable optimum.

The desirability of raising the level of nutrition in the nation is now recognised. The chief measures put forward for securing such improvement are an increase in food purchasing power, education in the apportionment of available means, and, where necessary, direct supply of suitable nutrients as a part of the social services. The relative emphasis to be laid upon the first and the second of these measures has been disputed, but a recent statement of opinion may be quoted in this connexion—

"It is undoubtedly true that, even if there were abundant money for food expenditure in every household, ignorance and stupidity would often prevent the maximum nutritional benefits from being obtained, as they certainly do in many of the houses of the well to do at present. At the same time, it is equally certain that the limiting factor in a large section of the community is food purchasing power. In any steps taken to improve the physical fitness of the community, both aspects of this problem, the educational and the economic, must therefore be dealt with." (Medical Research Council 1936)

It is clear that no amount of education will overcome the restricted food purchasing power of a substantial section of the people, for the latter as

increase in real earnings or in the direct supply of suitable nutrients is therefore an essential.

Another fundamental condition of improvement is the availability of suitable foodstuffs for distribution and purchase. This is largely bound up with agriculture and international trade and is being studied by the League of Nations Committee on the Problem of Nutrition, which has (1936) issued an interim report. It is to be hoped that the recommendations of this committee will lead to better planning of the supply of suitable nutrients at prices within working-class means, and will obviate in some measure the unfortunate restriction in supplies that have resulted from recent schemes for raising the price levels of important internally produced foodstuffs in the interests of a limited section of the community.

(3) *Housing and its improvement*—Though we have no certain knowledge of what constitutes an entirely satisfactory standard of housing in relation to the prevention of tuberculosis we may be sure that for accommodation to be suitable it should comply at least with a standard of overcrowding such as that of the Housing Act, 1935 the survey for which showed a substantial proportion of the population to be living under sub standard conditions.

This Act marks an advance in that it encourages the eventual reduction by local authorities, of overcrowding in all areas to the same standard, whatever be the amount shown to be present by the recent survey. So far as the prevention of tuberculosis is concerned probably the best indications of progress in a local authority area after each year's working would be: (a) the number of persons formerly living under overcrowded conditions who have been rehoused during the year expressed as a percentage of the total number reported as overcrowded at the time of the recent survey and (b) the percentage of the population still living in overcrowded conditions at the end of the year. Such figures might give more valuable information from the health standpoint than would the mere number of persons rehoused which measures the absolute rate of improvement. It is of course essential that rehousing should not force the tenant to reduce expenditure on food, clothing and other necessities beyond the margin of safety because of increase in rental and fares otherwise more harm than good may result (McGonigle 1933 McGonigle and Kirby 1936).

FUTURE IMPROVEMENT IN STANDARD OF LIVING

We have implied that raising of the level of nutrition and housing would help to prevent pulmonary tuberculosis. Now housing, nutrition and various other factors when integrated determine the general level of social conditions or standard of living. We could, therefore have taken the standard of living as a whole and discussed the indications for its improvement. And from the influential part played in the past by a rising standard of living in reducing tuberculosis in this country (see above) together with the evidence that the mortality still differs considerably at different social and economic levels (Registrar General 1931 Greenwood 1935) we might justifiably have concluded that the average standard of living, of the working-class is still inadequate to provide full health and that a continued rise would be a preventive measure of the first importance. And if this be true of a rise in the average level it applies even more where living conditions are below the average.

The facts that in this country at least the standard of living has improved except where unemployment is prolonged and acute that knowledge of the nature of food has increased and that it has been possible to mitigate hardships by regulated insurance and assistance do not afford reasons for relaxing efforts but are an encouragement to persevere. The problems of want are now of manageable dimensions (Bowley 1936).

Social Preventive Measures Applicable to Tuberculous Families

We must now consider certain social measures embodied in the national tuberculosis scheme that are specifically directed to tuberculous persons and their families. These operate from the time of notification, and are concerned with the family of the patient during his absence for residential treatment, and later with himself in addition after his return home. Their chief objects are to maintain the standard of living of the family to prevent spread of the disease among its members and to prevent relapse. They probably confer most benefit on persons whose condition is diagnosed before it reaches the advanced stage and whose lesions cease to progress unfavourably or begin to regress as a result of their residential treatment. Unless bed rest for sufficient time to attain clinical cure comes to be found practicable as a rule for such patients the subsequent few years will remain a critical period for many of them and after care will continue to play perhaps as important a part as the original form of treatment in determining the ultimate prognosis. The care and after-care of these patients and their families rather than of advanced cases with little hope of recovery will be discussed here.

INFLUENCE OF ECONOMIC STATUS UPON PROGNOSIS AND OF PROLONGED ILLNESS UPON ECONOMIC STATUS

For a proper understanding of the functions of social care and after care the influence of economic status of the patient upon the ultimate results of treatment must be recognised. This influence as judged by case fatality has been pointed out by many authorities (see MacNalty 1932a, Burnett 1932) and is supported by Bentley's (1938a) report on the recent experience of the London County Council with pneumothorax treatment. There are grounds for the view that the major function of the care and after-care organisations is to provide for the poor some of the more essential health facilities which the rich are able to buy for the effects of the presence of a tuberculous member in wealthy families and in the families of many sections of the working class are often very different.

The patient of ample means returning home from sanatorium, can often afford to absent himself from his duties until advised by his doctor that it is quite safe to resume them. When he does so he is often able to arrange that at first they shall be less arduous, or that he can have intervals for rest and recuperation. At home he can make special hygienic provisions and can arrange suitable sleeping accommodation while the standard of living of his wife and family will not become seriously affected by his disability provided this be not unreasonably prolonged.

The working-class patient after the benefit of a not dissimilar treatment in sanatorium (which in the case of the London County Council area, has been free during the past three years) returns to a home environment where the provision of suitable hygienic arrangements may be difficult and of separate sleeping accommodation (see Bentley 1938a) impossible even under conditions that would not constitute actual overcrowding under the 1935 Housing Act. Unless he is fortunate enough to have substantial savings or private sickness insurance the standard of living of his family will usually have become lower than it was before his illness and its resources will now be further strained by the return of a non-contributory member. Unless some portion of the patient's wage continues, his income will eventually consist of sickness insurance benefits, originally designed to tide over short periods of illness and—in the case of National Health Insurance—these will be halved after six months.

This income will be unable to meet the week's expenses for a man, wife, and several children of school age unless sufficient contributions are available from any additional earners in the family, and it may therefore have to be supplemented by private charity, or by public assistance. The dietary of the family, even if supplemented by grants of extra milk to the children, and of extra nourishment to their father, will usually be restricted compared with what they were when the father was at work, and while it may seldom become less than that regarded as adequate to prevent gross malnutrition, it must often fall below any reasonable standard for optimal health. Diversion of food to the patient on sentimental grounds intensifies risk to the remainder of the family. Under such circumstances the wage-earner, anxious to restore his family's standard of life to its former level, fearing or knowing that his job will not continue to be kept open, or—should he already have lost it—unwilling to risk refusing the offer of another one, not infrequently returns to work too soon. This is especially harmful because he has small chance of obtaining light work, or of transferring from an unsuitable occupation.

This gloomy picture shows how pulmonary tuberculosis in the primary wage earner of a working-class family accentuates just those social differences between himself and the head of a wealthy household that probably made him more liable to develop the disease in the first instance. As Sir Arthur MacNalty (1932d) puts it—

"Tuberculosis occurs most frequently in persons who are badly housed, who live under conditions of over crowding and whose earnings are frequently inadequate to secure more than the bare necessities of life. The occurrence of tuberculosis in its turn increases the poverty of the family still more and the unfavourable conditions become intensified, thus reducing the chances of recovery for the patient and increasing the probability of the spread of infection to other members of the household."

It is therefore not surprising that the similar sanatorium treatment obtained by poor and rich, with its equally satisfactory immediate results, is followed by a divergence in the subsequent course of the disease as it affects the patient and his family. To find the best means of mitigating these inequalities is thus an after care problem of the first importance.

MEASURES OF SOCIAL AFTER CARE

Possible guiding principles—The following points of principle might reasonably serve as the objective

(1) That the dietary of the patient, and also of each member of his family in contact with him, should be substantially higher than the minimum standard at present regarded as sufficient to prevent clinical malnutrition in the older sense and should correspond rather to standards for optimal health, and that separate sleeping accommodation (as defined by Bentley 1936a) and not merely "non-overcrowded" premises should be available for the patient.

(2) That the family income should to some extent be related to its level before the illness of the patient, if he was in employment, so that he be not tempted to return to full or unsuitable work before fit to do so.

(3) That, on the view that the prospects of cure in slight or otherwise favourable cases of pulmonary tuberculosis are prejudiced by the social deterioration apt to follow prolonged absence from remunerative work, social expenditure on care and after care in such cases should be treated, for a limited period after diagnosis, as on an equal basis with the medical expenditure on their residential treatment.

How far are these principles being translated into practice?

Basic measures—Within the limits of the powers assigned to them, medical officers, health visitors, nurses, social workers, and others in the care and after care organisations make every effort to supply the basic needs of tuberculous families. Among

their contributions are preferential treatment in rehousing, home supervision and nursing, extra nourishment to the patient, and public assistance. Yet only too often the good work of residential treatment is speedily undone. The question therefore arises whether wider powers should be sought. If policy were to be developed according to the principles just outlined, an increase in national expenditure would probably be required. It could, however, be argued that this would be justified financially by a decrease in the number of failures following residential treatment that had already cost the community a considerable sum.

In order to provide for such increased expenditure, it might be necessary to create a special insurance fund for tuberculosis (and perhaps for certain other prolonged but hopeful illnesses) administered under National Health Insurance, or to permit local authorities to raise their scales of assistance or to make larger grants in kind for all members of affected families. Some progress in this direction has already been made: for example in Sheffield the rent due from a tuberculous family may be paid by the local authority after adequate rehousing has taken place.

Rehabilitation and re employment—Rehabilitation and the provision of lighter or more suitable work for tuberculous patients also form an essential though difficult part of after care activities. Two of the present experimental schemes must be mentioned.

The first is the *village settlement*, complete with industries. The best known example is Papworth, so ably conducted under Sir Pendrill Varrier-Jones. Here, and at Prestor Hall, a somewhat similar institution, patients—usually those with intermediate or somewhat advanced disease—settle with their families semi-permanently (Papworth 1936, London County Council 1935a). It has been suggested (Marx 1936) that at most 10 per cent of ex-sanatorium patients are suitable for this type of life.

The second consists of *workshops and cottages at sanatoria*, e.g. in Wales and at Birmingham—which allow patients to remain beyond the usual course of treatment. Not only temporary work, but also instruction in the hygiene that should be aimed at on return home is thus available (Powell 1926, Ministry of Health 1935c).

The wider development of settlement, workshops, and cottages at or in connexion with the various municipal sanatoria seems to offer a definite advance in after care. But even with such provisions on a large scale, there would remain a great mass of patients with slight or intermediate disease, and with good or fair ultimate prospects of health, who require rehabilitation in the city environment where their homes are situated. Many of these patients, after return home from sanatorium, are—for some time at least—unfit to resume full time work at their former occupations, but would be capable of safely undertaking short-time work or of transferring to fresh occupations involving less arduous duties.

It is hard to see any satisfactory solution of this part of the problem without the active co-operation of industry. In the Soviet Union attempts are being made to solve it as follows—

In some types of case ordinary factory work is curtailed, but the hours are, say, only half time; the balance of pay being made up from social insurance funds. Alternatively, a room may be provided with a conveyor belt that moves at reduced speed—a scheme that seems less practicable. For other types of case special workshops are provided from social funds. Stress is laid upon the desirability of maintaining the skilled man in skilled work even though his occupation within his original industry grade may be changed.

The medical authorities of the factories are responsible for making these arrangements for their substantial tuberculous workers, and for regulating their hygiene.

conditions both in the factory and at home. For those whose home conditions are unsatisfactory night sanatoria are available in their own districts; the latter provide meals and sleeping accommodation under better conditions of hygiene and with a smaller risk of conveying serious infection to contacts (see Webb and Webb 1936 *Lancet* 1936 Dobbs and Russell 1937).

In this country an arrangement whereby doctors could secure light work in industry for their tuberculous patients with greater regularity than at present would be of value, though the existence of able-bodied unemployment would make its function difficult while the provision of night sanatoria in cities for the use of workers whose home conditions are unsatisfactory would also be useful.

Conclusions on Social Measures of Prevention

Social measures are important throughout the course of pulmonary tuberculosis for not only do they influence the liability to develop progressive lesions but they also affect the ultimate results of treatment. Improvement in the standard of living of the mass of the people and extension and intensification of the activities of the care and after-care organisations would be valuable measures of prevention.

(To be continued)

SCURVY AND GARDITIS

By STEPHEN TAYLOR, B.Sc. M.B. Lond.

GROCIUS COMPANY RESEARCH SCHOLAR ATTACHED TO THE MEDICAL UNIT ST THOMAS'S HOSPITAL

That scurvy may be associated with cardiac lesions was shown by Erdheim (1918). He dissected many children who had died of scurvy in Vienna in the post-war period. Two thirds of the hearts showed hypertrophy of the right ventricle. In the other one third the scurvy was only incipient or mild. In the more severe cases both ventricles were hypertrophied. The older the children the more constant was the enlargement. Sometimes cardiac failure led to hepatic stasis but this was also seen in the absence of heart changes. Findlay (1923) produced chronic scurvy in guinea pigs (hereinafter called pigs) and infected them with pneumococci and staphylococci; post mortem he found fatty degeneration of the heart muscle. Höjer (1924) examined the cardiac muscle of 10 scorbutic pigs. He found the same changes as in the skeletal muscle (hyperemia and atrophy). Occasionally there was necrosis going on to calcification. Changes appeared during the latent stages of scurvy. Meyer and McCormick (1928) and Bessey, Menten and King (1934) found fatty degeneration and hemorrhage into the heart muscle in uninfected scurvy. Rinehart and Mettler (1934) while studying the response of scorbutic pigs to intradermal infection with β hemolytic streptococci found degenerative and proliferative changes in the heart valves and muscle.

In control pigs the valves were compact with abundant wavy fibres; the nuclei were arranged axially with no visible cytoplasm. The myocardium showed occasional accumulations of lymphocytes, with or without mononuclear cells and fibroblasts. In scorbutic pigs the valves usually showed hyaline or mucoid degeneration of the fibres, with fragmentation and lack of axial arrangement. Occasionally there was slight proliferation of the endothelial and subendothelial cells. In the scorbutic infected pigs the valves, especially the mitral valve were greatly swollen. They showed eosinophilic hyaline areas and paler mucoid material. Two-thirds of the heart valves showed as well a proliferative reaction of the stroma and subendothelial cells giving rise to many cells with large

hyperchromic or vesicular nuclei and some multinucleate cells. The myocardium showed a fibrinoid degeneration with an endothelial infiltration. Only one heart was stained for bacteria and none were found. In a later paper Rinehart (1935) states that in one instance a large number of bacteria were seen associated with a lesion.

Joint changes were also described being again most marked in scorbutic infected pigs. These will not however be considered in this paper.

The organisms used were hemolytic streptococci obtained from spontaneous suppurative adenitis of pigs. An intradermal injection of 0.1 c.c. of a 24 hour glucose veal broth culture was given into the skin of the thigh.



FIG. 1.—The normal mitral valve of the guinea pig (x 60)

and local suppurative lesions developed. To protect the average pig from scurvy 4 c.c. of orange juice per day was needed. The biggest heart lesions were seen in infected pigs with subacute scurvy receiving 1-2 c.c. orange juice on alternate days.

Rinehart and Mettler considered that the lesions in the scorbutic infected pigs were essentially similar to those of human rheumatic fever.

Stimson, Hedley and Rose (1934) confirmed these results using hemolytic streptococci from human lymphadenitis but many negative findings were recorded. They also produced similar myocardial but no valvular lesions by intracardiac injection of scarlatinal streptococcal toxin in scorbutic pigs.

Schultz (1936a) has carefully repeated all Rinehart's work using the same organisms. He did not stain his heart sections for organisms.

Of his 24 control pigs 4 died from acute spontaneous hemolytic streptococcal infections and 5 of the uninfected ones showed pericarditis. Half the controls showed slight cardiac lesions, the commonest being subendothelial foci of mononuclear cells especially in the left ventricular papillary muscles.

His scorbutic pigs, which were never completely deprived of orange juice showed in about half no more than the controls. The rest showed diffuse valvular degeneration, with slight proliferation and occasional intense localised proliferation. Once only were there extensive changes including myo- and pericarditis.

His scorbutic infected pigs also never completely deprived of orange juice showed in addition to very severe local lesions at the site of injection the following: 1. Fibrinoid degeneration of the valves, the pericardium and the perivascular areas, the connective tissue becoming homogeneous, waxy and deeply eosinophilic. 2. A proliferative reaction of large mononuclear cells and lymphocytes around the degenerations. 3. No endocardial thrombi in spite of the destruction of the endothelium. 4. Rarely a myocarditis with necrosis of the muscle-fibres an increase in connective tissue cells and still more rarely a diffuse infiltration with small mononuclear cells and localised perivascular nodules of mononuclears and a few polymorphs. 5. A microscopic aortitis with mononuclear cells and a few eosinophils between the media and adventitia. Rarely intimal degeneration was present.

Some of the pigs were spontaneously infected with hemolytic streptococci and these showed more marked lesions than the pigs with induced infections.

Schultz considers that these lesions differ from those of human rheumatic fever in that no verrucous

endocarditis is seen, that the myocardial lesions do not closely resemble Aschoff nodules, and that they are few in number and are not distributed as are the multiple granulomata of rheumatic fever

Objects of the Experiments

The experiments to be described had five objects in view. First, to confirm the occurrence of lesions in infected scorbutic pigs, secondly, to attempt



FIG 2—Mitral valvulitis (scurvy + *S. viridans*) ($\times 50$)

to produce chronic lesions by the maintenance of chronic scurvy for as long as possible, thirdly, to see whether organisms were present in the heart substance, fourthly, to see whether the *Streptococcus viridans* was as efficacious as the hæmolytic streptococcus in producing lesions, and lastly, to see whether full doses of orange juice after infection would prevent or cure the lesions

Technique

Large pigs of over 300 g were used, as small ones perish very rapidly on a scorbutic diet. The basal diet was that of Rinehart and Mettler (1934), it contains adequate supplies of all vitamins except C, also sodium chloride and ferrous lactate. The diet and water were given ad lib. Measured rations of orange juice from fresh oranges were given with a fountain pen filler. The pigs were weighed weekly.

For the injections, 24 hour glucose beef broth cultures of human organisms, obtained from acute lesions, were used, and 0.2 c cm. was injected intradermally into the thigh. The hæmolytic streptococci were obtained from an appendix abscess and the green streptococci from an infected sinus. The hearts were opened, fixed and embedded so that, as far as possible, all valves were cut. Approximately every thirtieth and thirty first section was taken and stained with hæmatoxylin and eosin, and by the Gram Weigert method for bacteria.

It was only in the later stages of the investigation that the possible value of post mortem heart cultures was realised, and these were done in 13 pigs, but the injected organisms were never recovered and the inconstancy of the results demonstrated the well known difficulty of the technique.

Results

Weight changes—On the basal diet without orange juice, or with only 1 c cm. on alternate days, the pigs rapidly lost weight and died of scurvy in from one to three weeks. On 4 c cm. orange juice per day they gained weight steadily. On 2 c cm. orange juice on alternate days, scurvy was maintained in a chronic state.

Clinical changes—The scorbutic pigs showed the typical clinical signs—the head held on one side (the

scurvy face-ache position), paralysis of the hind limbs, loss of hair, loss of appetite, and hæmorrhage diarrhoea. Post mortem they showed subperiosteal, adrenal, and bowel hæmorrhages, and the characteristic heart changes. Only one pig showed any local reaction at the site of injection, an intradermal hæmorrhage.

Cardiac changes—The control pigs showed frequent subendocardial infiltrations with lymphocytes and endothelial cells, especially in the papillary muscles, and one showed a spontaneous pericarditis, a confirmation of the findings of Schultz (1936a). In the acute and chronic scorbutic pigs, whether infected or uninfected, the lesions were essentially the same, except that in the most chronic cases the hearts were considerably enlarged. Macroscopically, the mitral valves were usually thickened and puckered or actually nodular, sometimes with hæmorrhages into the nodules. The aortic valves were sometimes thickened and very occasionally nodular. The papillary muscles sometimes showed hæmorrhages. Microscopically, lesions were found at five sites: (1) the mitral valves, (2) more rarely, the aortic valves, (3) the auriculo ventricular junction (herein after called the A.V.J.), (4) the myocardium, between the muscle fibres, especially at the apex and in the papillary muscles, in the perivascular spaces, and in the auricle walls, and (5) the aorta. The cells in the lesions were polymorphs, endothelial cells, lymphocytes, and fibroblasts. In the acute lesions, polymorphs predominated, in the subacute and chronic, endothelial cells, lymphocytes, and fibroblasts. Giant cells were never seen. Most lesions showed interfibrillary and intercellular exudate, and a homogeneous appearance of the connective tissue. Small areas of calcification, as described

TABLE I—Group 1

Pig	Myocardium			A.V.J.		Mitral valve		Organisms
	P.V. infn.	I.M. infn.	Organisms	Infn.	Organisms	Edema	Infn.	
A	—	+	—	—	—	+	+	—
B	—	++	++	++	—	+	—	—
C	—	+	++	++	—	+++	—	—
D	++	+	—	+	—	—	+	—
E	—	—	—	+	—	+	++	—
F	—	—	—	+	—	—	+++	—
G	—	—	—	—	—	++	++	—
H	—	—	—	—	—	++	+	—
I	++	+	—	++	—	+	++	—
J	++++	+++	—	++++	—	+	+	—
K	++	+	—	+	—	++	+	—
L	+++	++++	—	++++	+	+++	+	—
M	+	+	—	++	+	+++	+++	—
N	++	++	—	—	—	++	+	—
O	++	+	+	+	++	+	+	—
P	++	+++	+	+	—	+++	—	—
Q	++	++	+	++	—	+++	++	—

Note.—In all Tables P.V. infn. = Perivascular infiltration, I.M. infn. = Intramuscular infiltration, Inf. = Infiltration, and A.V.J. = Auriculo ventricular junction. When a pig is mentioned outside its own group the group number is placed before the pig's letter, thus Pig O of Group 1 becomes Pig 1O.

by Højer (1924) were occasionally seen in the myocardium

Mild degrees of congestion of the lungs and liver were seen in some of the acutely scorbutic pigs. Advanced degrees were however consistently seen in the chronic cases. This was not due to the method of slaughter as the pigs died naturally.

Vascular lesions in scorbutic infected pigs have been described by Menten and King (1935). They state that scorbutic pigs infected with diphtheria toxin or green or hemolytic streptococci show diffuse hyperplasia of the media of the arteries of the lungs liver spleen and kidneys. This is hard to estimate as unless the vessels are injected, the elastic tissue of the media contracts producing an apparent medial thickening. This was observed in the lungs and livers of control scorbutic and scorbutic infected pigs but one could not be certain that it was greater in the latter two groups. The coronary arteries of the scorbutic and scorbutic infected pigs frequently showed organised thrombi, but without evidence of infarction. Inflammation extending into the wall of the coronary artery was occasionally seen. Once complete hyaline degeneration of the media of the coronary artery was seen (Group 4 Pig C).

The pigs were divided into six groups:—

GROUP 1

SCURVY ALONE

The seventeen pigs in this group received the basal diet supplemented in eight cases by small doses of orange juice—never more than 3 c.c.m. on alternate days. Two pigs (B and D) having received 4 c.c.m. of orange juice on the twenty first day and 1 c.c.m. on alternate days from then on survived from 4 and 7 weeks respectively—the latter being killed. (The survival times are in all cases from the start of the experiment.) Four (A, C, L, and P) died within 2 weeks of starting the diet while the remaining eleven died within 4 weeks.

The macroscopic changes found were the typical scorbutic lesions, hemorrhages and congestion of the lungs (E and I) slight congestion of the liver (F, K, M, N, and O) and more marked congestion (O) fatty changes



FIG. 3.—Aortic valvulitis (subacute scorbutic + *Aeromonas*) ($\times 80$)

in the liver (G, K, M, O, P, and Q) and diffuse millary pyemic abscesses (J, L, N, O, P, and Q) affecting the liver spleen, kidneys and heart (J). The heart was enlarged in three (H, K, and I) and the mitral valve thickened and nodular in all except six (A, B, C, D, N, and O). The microscopic heart lesions are shown in Table I.

Organisms were present (though none had been injected) in 8 hearts; 4 of these (L, O, P, and Q) showed other evidence of autogenous infection—millary pyemic abscesses. In C they were large Gram-positive bacilli. In the rest they were Gram positive coccobacilli usually in pairs and sometimes showing polar staining (Fig. 6).

In some hearts there were intense polymorph reactions around the organisms. In others reactions and organisms were dissociated. The severest lesions were often in hearts entirely free from organisms (I, J and N).

Lesions somewhat resembling Aschoff nodules were present in the myocardium of L, P and Q and at the A.V.J. in L and Q (Figs 7, 9 and 10). These lesions were usually perivascular with intramuscular oxidate endothelial cells lymphocytes, fibroblasts, and a few



FIG. 4.—Mitral valvulitis (scurvitic + *Aeromonas*) ($\times 160$)

polymorphs, but no giant cells. Other myocardial lesions were two areas of necrosis 2 and 3 mm. across with an intense inflammatory reaction around but no organisms associated (J), perivascular polymorph infiltrations (J, Fig. 8) massive active inflammatory infiltration in the auricle (B, C, I, J, and Q) and large planes of endothelial cells, lymphocytes and some polymorphs distending apparently the ventricular lymphatic vessels (L). Organised thrombi in the coronary artery at the A.V.J. were present in N, O and P.

The mitral valves showed varying degrees of edema between the fibres oxidate hemorrhage and diffuse and localised cellular infiltration. In the diffuse infiltrations, the cells were endothelial sometimes whorled around a small blood vessel and lymphocytes. The localised infiltrations (D, F, I, N, and Q) showed a necrotic centre with a polymorph reaction around, with some endothelial cells and lymphocytes as well. The valve endothelium was never destroyed and platelet deposits were absent. A mass of fibroblasts on the auricular surface of the valve was present in M.

GROUP 2

SCURVY PLUS 8 HEMOLYTICUS

For the first 3 weeks the eight pigs in this group received basal diet only and all developed well marked clinical scorvut. From then on they were given 0.5 to 2 c.c.m. of orange juice on alternate days according to the severity

TABLE II—Group 2

Pig	Myocardium			A.V.J.		Mitral valve		
	P.V. Inf.	I.M. Inf.	Organ. Issues.	Inf.	Organ. Issues.	Edema	Inf.	Organ. Issues.
A	—	—	—	—	—	—	—	—
B	+	+	+	+	+	+	+	+
C	+	+	+	+	+	+	+	+
D	+	+	+	+	+	+	+	+
F	+	+	+	+	+	+	+	+
I	+	+	+	+	+	+	+	+

of their condition. G and H survived for 11 weeks. A for B and D for 6 and the rest for 4 weeks. After 31 weeks 0.2 c.c.m. of a 24 hour culture of *S. hemolyticus* was injected intradermally. No local lesions developed.

The macroscopic changes found were the typical scorbutic lesions, acute mediastinitis (B and D) congestion of the liver and cardiac enlargement (G and H) the two

pigs which survived for 11 weeks), puckered nodular mitral valves with hemorrhages (D, E, F, G, and H), and papillary hemorrhages (D and F). The microscopic heart lesions are shown in Table II.

Organisms were present in four in considerably greater numbers than in the hearts of Group 1. In three the organisms were Gram positive cocci in pairs or short

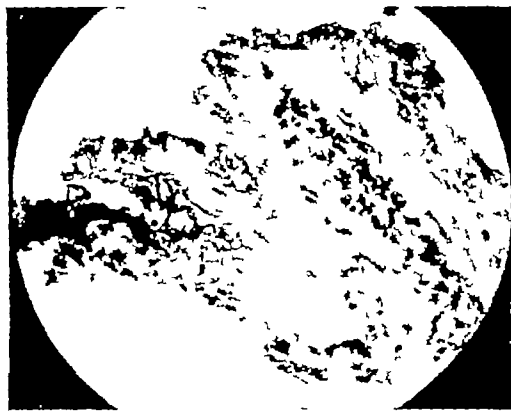


FIG 5—Gram positive cocci in tip of mitral valve (scurvy + *S. hemolyticus*) ($\times 250$). A dense mass of organisms is seen on the extreme left.

chains, morphologically identical with the injected streptococci. The remaining organisms were Gram positive coccobacilli in pairs showing polar staining, similar to those found in Group 1. The mass of cocci in the valve of D is shown in Fig 5. In C, cocci were present both in the folds of the valve surface and in the valve substance.

Small polymorph masses were present in the ventricular muscle of B, D, and F. B and D showed large acute inflammatory infiltrations in the auricular muscle. The mitral valves showed acute inflammatory nodules in D, E (Fig 4), and F, while B and C showed diffuse infiltration only.

GROUP 3

NORMAL DIET PLUS *S. HEMOLYTICUS*

The three pigs in this group received the basal diet plus 4 c.c.m. orange juice daily. In the 8 weeks of the experiment their weights steadily increased from an average of 270 g. to an average of 490 g. After 3½ weeks, 0.2 c.c.m. of a 24-hour culture of *S. hemolyticus* was injected intradermally. No local lesions developed and the pigs continued to gain weight. After slaughter, one pig showed a chronic adhesive pericarditis, such as is commonly seen in controls (Schultz 1936a), and an organised thrombus in one coronary artery, but no organisms. There was no myocarditis or valvulitis. The other two pigs showed no abnormalities.

TABLE III—Group 4

Pig	Myocardium			A V J		Mitral valve		
	P V Infn	I M Infn	Organ Isms	Infn	Organ Isms	Edema	Infn	Organ Isms
A	+	-	-	+	-	++	++	+
B	+	-	-	+	-	+	-	-
C	+++	++	-	-	-	++	+++	++
D	+	+++	-	+++	-	+++	+++	++

GROUP 4

SUBACUTE SCURVY PLUS *S. HEMOLYTICUS*

For the first 12½ weeks the pigs received 1 to 2 c.c.m. orange juice on alternate days. Hemolytic streptococci being injected as before after 4 weeks. A died after 9 weeks and B and D after 12 weeks. C was then given 4 c.c.m. orange juice daily and it gained weight steadily for the next 5 weeks. It was then killed.

Post mortem A and B showed typical scorbutic lesions. The liver of C was very fatty (cf. Group 5). Those of A, B, and D had a typical nutmeg appearance, and histologically they showed intense congestion with fatty change. The lungs of B and D also showed marked congestion on histological examination. In all, the heart was greatly enlarged and the mitral valves thickened and nodular. In D, the aortic valve was nodular. The microscopic heart lesions are shown in Table III. The organisms in A were Gram positive diplococci and in C and D Gram positive coccobacilli in pairs with polar staining.

Lesions somewhat resembling Aschoff nodules were present at the AVJ of D. Organised thrombi were present in the coronary arteries of C and D. The valvulitis was localised in A, C, and D. The aortic valve of D showed an inflammatory mass composed of polymorphs, lymphocytes, and endothelial cells, the valve endothelium being intact (Fig 3). C showed an inflammatory reaction in the intima and adventitia of the aorta.

TABLE IV—Group 5

Pig	Myocardium			A V J		Mitral valve		
	P V Infn	I M Infn	Organ Isms	Infn	Organ Isms	Edema	Infn	Organ Isms
A	+	+	-	+	-	++	+	-
B	+	++	-	+	-	++	+	-
C	++	++	-	++	-	++	+	-
D	+	+	-	+++	-	++	+++	-

GROUP 5

SCURVY PLUS *S. HEMOLYTICUS*, FOLLOWED BY NORMAL DIET

The four pigs in this group received the basal diet only for 4 weeks. Organisms were then injected as in Groups 1, 3, and 4, and thenceforward the pigs received 4 c.c.m. orange juice per day. All recovered from their scurvy and gained weight continuously for the remaining 15 weeks of the experiment. They were then killed. None showed signs of scurvy post mortem. The livers were very fatty; the hearts were all slightly enlarged, and the mitral valves were all nodular. The microscopic heart lesions are shown in Table IV. In C, the ventricular lymphatics



FIG 6—Gram positive coccobacilli with polar staining in mitral valve (scurvy) ($\times 800$).

vessels were filled with cells as in 11L. Massive inflammatory infiltration of the auricle, mainly with endothelial cells, was present in C. The valvular infiltration was diffuse in A, B, and C and localised in D. The valvulitis was endothelial and in A, B and D many fibroblasts were present. The valve of C contained an immense hemorrhage. Acute inflammatory masses in the aorta were present in B (media) and C (adventitia).

GROUP 6

SCURVY PLUS *S. VIRIDANS*

The four pigs in this group received the basal diet for 3½ weeks. They were then injected intradermally with 0.2 c.c.m. of a 24-hour glucose beef broth culture of

Streptococcus viridans. B developed a haemorrhage at the site of injection. The others showed no local lesions. From then on the pigs received 2 c.cm. orange juice on alternate days. B died after 4 weeks. D after 5 and A after 6. C gained weight on this dose of orange juice so it was reduced first to 1 c.cm. then to 0.5 c.cm. on alternate days. It died after 13 weeks.



FIG. 7.—Aschoff like area in myocardium (scurvy) ($\times 65$)

Post mortem A, B, and C showed typical scorbutic changes. C showed dilated auricles, congested lungs, and a nutmeg liver; the congestion and fatty change being confirmed histologically. A showed slight congestion of the liver on histological examination only. D showed millary abscesses of the liver and spleen. All hearts showed puckered nodular mitral valves. The microscopic heart lesions are shown in Table V. Gram positive diplo-

group of organisms was definitely not streptococcal. The two pigs which lived in subacute scurvy for the last 7 of their 11 weeks both showed enlarged hearts and very congested livers.

Intradermal haemolytic streptococcal infection in non-scorbutic pigs does not result in the characteristic heart lesions seen in scorbutic pigs.

Subacute scurvy plus intradermal haemolytic streptococcal infection leads to heart lesions similar to those seen in acutely scorbutic infected pigs, but the hearts of these pigs were large and the livers and lungs showed much venous congestion. The livers also showed fatty changes. A chronic congestive cardiac failure appears to have been produced. The one pig which spent the last 5 weeks of its life on an adequate diet showed no venous congestion and although there was no antemortem debility—it was killed in apparent good health—its mitral valve contained organisms.

A full antiscorbutic diet started immediately after intradermal haemolytic streptococcal infection did not cure the cardiac lesions. These showed evidence of chronicity in the absence of polymorphs and the abundance of endothelial cells, lymphocytes and fibroblasts. The full diet appeared to free the valves from organisms and prevent the development of congestive failure.

Scurvy plus intradermal Streptococcus viridans infection results in cardiac lesions which do not differ from those seen in scorbutic pigs with or without extraneous haemolytic streptococcal infection. Two hearts showed organisms morphologically identical with those injected, but the second also showed diplo-cocci bacilli with polar staining. Once again subacute scurvy was associated with passive venous congestion.

TABLE V.—Group 6

Pig	Myocardium			A V J		Mitral valve.		
	P V Infa	I M Infa	Organisms	Infa	Organisms	Edema	Infa.	Organisms
A	—	++	—	+	—	+++	+++	—
B	+	++	++	+	—	+	+	—
C	+	++	—	—	—	+	++++	+
D	+++	+++	—	+++	—	+++	+	—

cocci were present in the myocardium of B associated with a small polymorph abscess. The valve of C (Fig. 2) contained two short chains of streptococci and a few Gram positive coccobacilli in pairs with polar staining. D showed Aschoff like areas at the A V J. The valvular infiltration was localized in A and C and in C—the most chronic case—endothelial cells and fibroblasts predominated.

Discussion

The findings in the six experimental groups are summarised below.

Scurvy alone—In the absence of extraneous infection scurvy leads to valvulitis and myocarditis with acute and subacute inflammatory foci. Gram positive cocci or bacilli were present in half the diseased hearts but many of the severest lesions showed no organisms.

Scurvy plus intradermal haemolytic streptococcal infection leads to heart lesions differing in no essential way either in incidence or histology from those seen in scorbutic pigs not so infected. Two thirds of the hearts showed organisms, and they were more numerous than in the scorbutic hearts—but one



FIG. 8.—Intravascular infiltration (scurvy) ($\times 160$)

CAUSE OF THE CARDITIS

The carditis may be due to scurvy alone, to scurvy plus autogenous infection, or to scurvy plus extraneous experimental infection. Since the lesions were as common in scorbutic pigs as in scorbutic experimentally infected pigs the first or second explanation must be true though this does not exclude the third possibility.

The lesions occurred in 16 pigs in which no organisms were found. But as only about 60 of the 600 sections from each heart were examined it is quite possible that organisms were missed. Organisms were present in 8 out of 17 scorbutic pigs with lesions and in 9 out of 13 scorbutic experimentally infected pigs with lesions. Further organisms were present

in much greater numbers in the second group. Of the scorbutic pigs, 1 showed Gram positive bacilli, while 7 showed Gram positive coccobacilli with polar staining. Of the scorbutic experimentally infected pigs, 5 showed Gram positive cocci in pairs or chains, while 4 showed Gram positive coccobacilli with polar staining.

If the lesions represent the response of the scorbutic heart to infection, it appears that the infection is in no way specific. Bacilli and coccobacilli are just as, if not more, important than streptococci.

The frequent dissociation of lesions and organisms suggests that they may be a non-causative secondary infection. The occurrence of organisms in a recovering pig (4C) is against their being a terminal infection.

Conclusions—The one specific factor associated with the cardiac lesions is scurvy. Extraneous infection increases neither the incidence nor the severity of the lesions. The lesions sometimes contain organisms, even in pigs not experimentally infected. Organisms are more frequently seen after extraneous experimental infection. The infection does not appear to be a terminal one, but it may well be a secondary phenomenon of no importance.

COURSE OF THE DISEASE

All the 6 pigs with subacute or chronic scurvy showed considerable congestion of the lungs and liver, with fatty changes in the liver. Of the rest, 1 showed moderate hepatic congestion and 6 slight. Apparently the scorbutic carditis, if allowed to become chronic, results in congestive cardiac failure.

Clinical cure of scurvy in 5 pigs did not result in the disappearance of the cardiac lesions. It seems that once the heart is damaged, vitamin C will not

framework of the heart and its coverings, and other parts of the body. Experimental rheumatic fever should therefore show not only Aschoff's nodules but also these nodules characteristically distributed. Thus scorbutic carditis cannot claim to do

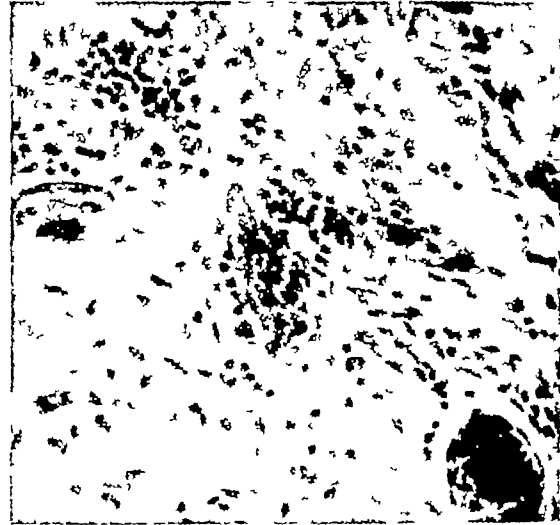


FIG 10—Aschoff like area at auriculo-ventricular junction (scurvy) ($\times 400$)

Myocardial lesions—The commonest sites of inflammation in the scorbutic pigs were at the base of the interventricular septum and the origins of the papillary muscles, both common sites for Aschoff's nodules. But in rheumatic fever the nodules are also distributed diffusely throughout the ventricular myocardium, and this was never seen in the pigs.

Lesions bearing some morphological resemblance to Aschoff's nodules were seen in 5 hearts (3 in the myocardium and 4 at the A V J). These lesions were usually perivascular or near arterioles. They showed much intramuscular exudate, in the early stages a polymorph reaction, and in the later stages endothelial cells, lymphocytes, and fibroblasts. Giant cells were never seen. But many of the myocardial lesions bore no resemblance whatever to Aschoff's nodules, for example, the huge areas of necrosis in 1J, the frequent small polymorph abscesses in the ventricles, and the massive polymorph infiltrations in the auricles. The infiltration of the lymphatic vessels with cells (1L and 5C) is sometimes seen in rheumatic carditis but is not specific (Grant 1936). Bacteria in rheumatic carditis are, to say the least, rare. Klinge and McEwen (1932) made complete serial sections through rheumatic hearts. Bacteria were occasionally seen, but their position and polymorphism suggested that they were of no aetiological significance.

Valve lesions—The valves attacked in the scorbutic pigs were the mitral and rarely the aortic. In rheumatic fever the aortic valve is attacked in a somewhat higher proportion of cases. The valvulitis in the pigs was similar to the rheumatic valvulitis but polymorphs were perhaps more abundant. No blood vessels with whorling of the endothelial cells around, such as are seen in rheumatic valvulitis (Coombs 1924), were common. Vegetations were, however, never seen. But very rarely, rheumatic valvulitis occurs without the formation of vegetations (Grant 1936). The valvulitis is the essential feature and the vegetations are secondary. Organisms are not seen in rheumatic valvulitis.

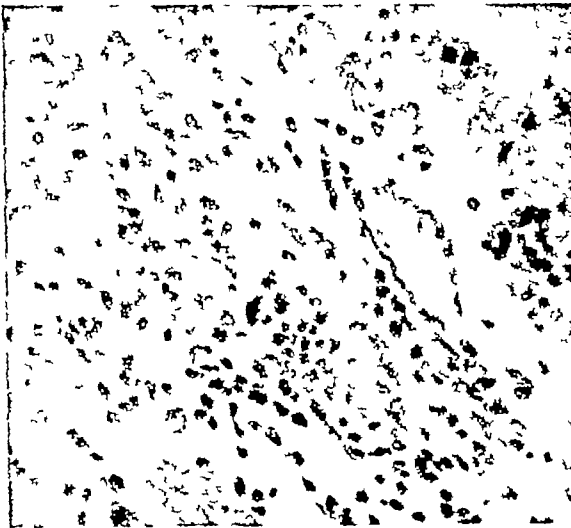


FIG 9—Fulgured view of Fig 7 ($\times 400$)

cure it though it does prevent the development of congestive failure.

RELATION OF LESIONS TO RHEUMATIC CARDITIS

Grant (1936) has pointed out that there is nothing specific for rheumatic fever in the tissue reaction seen in the heart. All the cells seen in the Aschoff's nodules are met with in infections from other causes, for example the large mononuclear and multinuclear cells are seen in the vegetations of subacute bacterial endocarditis. But in no other disease do we find these small foci distributed throughout the fibrous

scorbutic valvulitis they are frequently present sometimes in large numbers. Yet the valvulitis bore no morphological resemblance to human bacterial endocarditis.

Aortic lesions.—The aorta in the scorbutic pigs sometimes showed polymorph infiltrations. These are sometimes seen in human rheumatic carditis (Coombs 1924 Shaw 1929).

Conclusions.—The lesions in scorbutic carditis are those of non-specific inflammation. In so far as rheumatic carditis shows non-specific inflammation they can be said to be similar. But that is all. The scorbutic lesions often bear no resemblance to rheumatic lesions and bacteria are frequently present in the scorbutic lesions. However neither clinically nor morphologically does scorbutic carditis resemble human bacterial endocarditis.

RHEUMATIC CARDITIS AND VITAMIN C

Rinehart (1935) has pointed out that scurvy and rheumatic fever both show joint lesions, a degeneration of the collagenous tissues and hemorrhagic manifestations. Geographical, social, environmental and seasonal incidences show no convincing correlation. Warner, Winterton and Clark (1935) found no lack of fresh fruit and vegetables in rheumatic children but, at Christ's Hospital, an increase in consumption was associated with a fall in rheumatic fever.

Years	1918-22	1923-7	1928-32
Consumption of fresh fruit and vegetables per day	0.31 lb	0.39 lb	0.41 lb
Cases of rheumatic fever	19 (3.4%)	9 (1.1%)	6 (0.75%)

But in the first five year group the children had no fresh butter, less total protein and fat and more carbohydrate.

Perry (1935) examined the vitamin-C reserves in 5 active and 6 quiescent children and concluded that lack of vitamin C is not an important factor in the cause of acute rheumatism though mild degrees of this deficiency are not uncommon in rheumatic children.

Sendroy and Schultz (1936) found an apparent ascorbic acid deficiency in 8 out of 13 rheumatic children but in only 2 of these could it be ascribed to a poor diet. The others vomited the test doses or failed to absorb them. They considered that their results did not support the C lack hypothesis.

Schultz (1936b) found that large doses of ascorbic acid reduced the capillary fragility in 28 children with old rheumatism but did not reduce the incidence of recurrent rheumatic manifestations. This seems to show that the rheumatic children were not completely saturated with vitamin C.

Abbasy Hill and Harris (1930) using 107 active rheumatics, 88 convalescent rheumatics, 64 controls, 42 cases of active and half active surgical tuberculosis and 46 quiescent cases found a striking decrease in vitamin C excretion in the active and convalescent rheumatics and in the cases of active tuberculosis. The cases of quiescent tuberculosis gave normal excretions. Further it was extremely difficult to saturate the rheumatic children with vitamin C. They conclude that there is in rheumatic fever a greatly increased metabolic use of and need for vitamin C. They accordingly recommend large amounts of vitamin C both therapeutically and prophylactically.

In the unlikely event of there being any direct relation between human rheumatic fever and the scorbutic carditis of pigs the results described in this paper would suggest that vitamin C is of the greatest prophylactic value but of less use therapeutically.

Once the scorbutic carditis has been produced cure of the scurvy has no effect on the appearance of the heart lesions though it does prevent the development of congestive failure. Further a mild degree of scurvy (plus infection) is enough to produce the carditis so that the absence of frank scurvy in rheumatic children does not exclude the possibility of a relationship.

Summary

1 Guinea pigs suffering from scurvy show in their hearts valvulitis, myocarditis and occasionally pericarditis often associated with Gram positive organisms even when none has been injected.

2 The lesions are commonest in the mitral valve, the auriculo-ventricular junction, the perivascular areas in the myocardium, and the papillary muscles.

3 In the acute lesions polymorphs predominate in the chronic lesions endothelial cells, lymphocytes and fibroblasts. Exudate is usually present. Giant cells and vegetations are never seen.

4 The lesions resemble those seen in rheumatic carditis only in that they are both a diffuse non-purulent carditis without gross valvular vegetations.

5 The intradermal injection of hemolytic or green streptococci in scorbutic guinea pigs does not increase the incidence or severity of the lesions but does increase the incidence with which organisms are found in the heart.

6 Organisms are found in the mitral valve, the auricular and ventricular muscle and the auriculo-ventricular junction. They are Gram positive bacilli, coccobacilli in pairs showing polar staining and when these have been injected, streptococci. They were not recovered by heart culture. They are usually but not always associated with lesions but many of the largest lesions contain none. This autogenous or extraneous infection of the heart is probably not terminal but may be secondary and unimportant in causing the lesions.

7 Infected guinea pigs with mild subacute scurvy show similar lesions.

8 Infected guinea pigs kept in a state of subacute scurvy for a considerable time develop congestion of the lungs and liver, the latter having a nutmeg appearance.

9 Once the heart lesions have developed curing the scurvy will not remove the lesions though it does prevent the development of congestive failure.

I have to thank Prof. S. J. Cowell, Prof. O. L. T. J. Wesslow and Dr. J. Bamforth for their criticism and encouragement and A. James and L. J. Lewis for their help with the animals and the histological work. The Marmite Food Extract Company kindly supplied yeast for the animals diet free of charge.

REFERENCES

- Abbasy, M. A., Hill, N. G., and Harris, I. J. *Brit. Jour. Med.* 2, 1412.
 Bessoy, O. A., Menten, M. L., and Elmer, C. F. *Brit. Jour. Med.* 2, 1413.
 Coombs, C. (1924) *Rheumatic Fever, Its Pathology and Treatment*.
 Endley, J. M. (1923) *J. Path. Bact.* 2, 272.
 Grant, J. T. (1936) *Quart. Jour. Med.* 3, 33.
 Harris, I. J. (1931) *Brit. Jour. Med.* 2, 233.
 Menten, M. L., and Elmer, C. F. *Brit. Jour. Med.* 2, 1411.
 Perry, S. J. *Stand. Jour. Med.* 1, 1.
 Rinehart, J. F. (1935) *Stand. Jour. Med.* 1, 1.
 Schultz, M. J. (1936) *Stand. Jour. Med.* 1, 1.
 Sendroy, J. and Schultz, M. J. *Stand. Jour. Med.* 1, 1.
 Shaw, A. B. (1929) *Stand. Jour. Med.* 1, 1.
 Warner, J. C. W., Winterton, J. L., and Clark, J. E. *Stand. Jour. Med.* 1, 1.

TUBERCULOUS GLANDS OF THE NECK IN CHILDREN

RESULTS OF SURGICAL TREATMENT

By SIR LANCELOT BARRINGTON-WARD, K C V O,

Ch M, F R C S Edin, F R C S Eng

SENIOR SURGEON, HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET, SENIOR SURGEON, ROYAL NORTHERN HOSPITAL

RECENT articles and correspondence in the medical journals have painted a gloomy picture of the surgical treatment of tuberculous glands of the neck. Dr Brian C. Thompson, district tuberculosis officer, seems to have been peculiarly unfortunate in his experience and has condemned the radical surgical treatment wholeheartedly (*Lancet*, 1936, 1, 946, *Brit med J* 1936, 2, 584). After personal observation of 44 cases, representing 55 radical operations, he found that there was a gross, palpable, local recurrence in 50 cases. Of 36 patients, 18 had a persistent discharging sinus. Of 43 cases, in 21 the scars were bad. Results such as these are grievous indeed and would certainly condemn the surgical treatment of tuberculous glands of the neck, if this were the general experience of surgeons accustomed to deal with large numbers of these cases.

These findings were so completely at variance with my own experience that I determined to check my position and see exactly what my results had been at the Hospital for Sick Children, Great Ormond-street, over a period of years. In a children's hospital with an age limit of 12 a prolonged follow up is difficult, but with the aid of an efficient almoner's department I was able to trace 95 cases from a consecutive list of 133 radical operations. Of the 95 cases traced, I have personally examined 89. The patients were examined in my out-patient clinic and the visiting post-graduate and undergraduate students served as a jury in assessing the cosmetic and general results of the operation.

In estimating the success of any method of treatment the essential points to be determined are (1) the mortality, (2) the cure of the disease, (3) any deformity due to the operation, structural damage, and scarring, (4) the time taken to effect a cure. The results in this series were as follows—

(1) *Mortality*—There was no operative mortality. Ninety-four of the 95 patients traced were alive and well. One patient had died three years after the gland operation from mastoiditis and streptococcal meningitis. It has been suggested that generalised tuberculosis some times follows the excision of tuberculous glands of the neck. I have never seen this, but I have notes of 2 cases in which scraping of a tuberculous abscess was followed by tuberculous meningitis.

(2) *Cure of the disease*—Only 1 case required any further treatment. Eleven patients had slightly enlarged glands in a different part of the neck from the original operation, but the patients were not aware of them. They were all in perfect general health.

(3) *Deformity*—This may arise from nerve injury or from scarring. In no case was there any injury to any nerve. As to scarring as critical an attitude as possible was adopted in estimating the amount of deformity. It was decided that *good* should mean a scar that was invisible or could just be detected on close inspection. *Fair* should denote a scar that could be seen but not be considered a disfigurement. Such a scar would be in the line of one of the neck creases, but a little broad or a little thickened. *Poor* should include the others—scars (puckered, irregular or broad) not in one of the natural creases, scars that made it at once apparent that an operation had been performed on the neck. Many of the patients were photographed as a record and these

photographs can be inspected by anyone interested. Examples of what was judged good, fair, and poor.

Good—Of the 65 patients considered good, in 26 a scar was practically invisible.

Fair—20 patients.

Poor—The 4 patients in this category had suffered from severe skin infection and sinuses before commencing operation.

(4) *Time taken to effect a cure*—The average stay in hospital was 22 days. Three had had a discharging sinus after operation.

DISCUSSION

In the consideration of these results, it must be remembered that the majority of the glands were caseous, 30 of them were complicated by an abscess and 10 by sinuses—the result of no treatment or treatment elsewhere. Extensive involvement of the skin makes a good cosmetic result difficult. There were nearly all instances of primary pharyngeal infection and therefore presumably bovine in origin. The tonsillar gland was usually the first infected, a removal of the tonsils formed part of the treatment. All the patients were children. In these respects this series may differ from patients of all ages. Tuberculosis dispensaries, where general infection and infection by the human bacillus may be more prevalent.

It is not my intention in this short paper to criticise closely alternative methods of treatment. Sympferin iod, various tuberculin, X rays and radium actinotherapy of different kinds have their convinced supporters who will probably remain convinced of their efficacy. The variety alone of the therapeutic measures indicates some weakness in position. Moreover, there are certain obvious disadvantages. Non-surgical treatment may have to be prolonged for months or years. In this series treated by dissection the average stay in hospital was 22 days, and the patients could then be considered cured. The presence of discharging sinuses in ambulatory patients cannot be considered healthy for the community. It would not be tolerated in the circles from which private patients are drawn. After dissection only 3 of 89 patients had a discharge from the wound after operation, which persisted a few weeks in one case, 2 months in another, and 6 months in the third.

SURGICAL MANAGEMENT

The surgical management of a tuberculous gland in the neck should be, in brief, as follows—

When the patient is first seen, a thorough search is made for any focus of infection. From the anatomical situation of the gland, it is usually possible to deduce the portal of entry—tonsils, adenoids, scalp, teeth, or ears—and the appropriate treatment, if necessary, is instituted. Rest is enjoined in mild cases by splinting the neck, in severer cases by recumbency. A convalescent home may be desirable. Every measure is taken to improve the general resistance of the patient. The glandular enlargement is watched and many will recede and disappear under this treatment. The simple gland, due to a septic infection alone, will certainly subside. If the gland persists after 3 months of general treatment, or if at any time it shows signs of softening or enlargement, it should be excised. The removal of a tuberculous gland intact leaves an invisible scar and terminates the illness. If the patient is seen for the first time with the glands caseous, with deep or superficial abscess formation, excision is still the best treatment. Incision and aspiration lead to infection of the skin and a sinus in most cases. A superficial abscess, provided that the skin is not too widely involved, is no contra-indication to operation.

Removal of all the underlying glands from which the abscess has arisen leads to a speedier cure. All the glands in the affected area can and should be dissected out. If every visible gland is removed there will be no local recurrence. It has been often remarked that the operation is not one to be undertaken lightly and should not be relegated as so often in the past to a now house surgeon for a minor surgical exercise. It requires good anaesthesia, good light and adequate assistance. Under these conditions the surgical removal of tuberculous glands of the neck by dissection is one of the most satisfactory operations in surgery.

I am greatly indebted to Mr John Semple, F.R.C.S. surgical registrar to the hospital for the great trouble he has taken in collecting these cases and checking my observations.

THOROTRAST AS A CONTRAST MEDIUM

A CASE REPORT

By CLAUDE ELMAN, M.D., M.R.C.P. Lond.

ASSISTANT PHYSICIAN TO QUEEN MARY'S HOSPITAL, STRATFORD
PHYSICIAN TO THE MARLBOROUGH STREET HOSPITAL FOR
DISEASES OF THE CHEST, LONDON AND

ELIZABETH HAWORTH, M.R.C.S. Eng., D.M.R.E.

RADIOLOGICAL ASSISTANT AT THE LONDON HOSPITAL

We have observed the use and effects of Thorotrast in a case in which a detailed post-mortem examination was made and we think it may be useful to place our investigations on record.

Thorotrast is absorbed by the reticulo-endothelial system and is radio opaque so that it makes the liver and spleen visible on radiography. It is described by the manufacturers as a highly dispersed thorium dioxide sol containing 25 per cent of thorium dioxide and miscible under any conditions with body fluids without flocculence.

CLINICAL RECORD

The patient was admitted to Queen Mary's Hospital, Stratford, on Oct 5th 1934. His age was 58 and he had been quite well until June 1934, when he had an attack of pleurisy for which he had a week in bed. Six weeks later he thought he had a swelling in the right upper abdomen. His appearance was fairly healthy, but his speech and mental processes were slow. His teeth were carious and there was a good deal of pyorrhea. The tonsillar glands were enlarged. The lungs nervous system and heart showed no abnormal physical signs apart from frequent extrasystoles. The liver however was greatly enlarged reaching to within one inch of the umbilicus, and there were three elastic swellings palpable near the lower margin. No free fluid was apparent in the abdominal cavity. In the out patient department a tentative diagnosis of secondary malignant disease of the liver had been made, but a barium-meal examination performed on Sept 20th did not indicate malignant disease of the stomach.

Pathological investigations.—A blood count (Oct 7th) showed 13,200 white cells per c.mm. with polymorphs 61 per cent, lymphocytes 20 per cent, monocytes 5 per cent, eosinophils 1 per cent, and basophils 1 per cent (count of 300 cells). There was moderate anisocytosis (microcytosis without megalocytosis) and some pallor of the red cells; also occasional poikilocytosis and polychromasia. The blood Wassermann reaction was negative and the complement fixation test against echinococcus antigen was also negative. An examination of the urine (Oct 10th) showed albumin +, sugar 0. There were a few white cells and epithelial cells, but no casts or crystals. *B. coli* was grown in culture. A test for occult blood in the faeces was positive.

Course of illness.—On Oct 13th the patient developed some coryza with pyrexia. For the next fortnight his condition remained about the same with a slight rise in

the evening temperature. It was then decided to give 75 c.cm. of thorotrast in three doses of 25 c.cm. on alternate days. No ill effects were noticed after the first injection on Oct 20th but after the injection on Nov 2nd the patient complained of headache and the temperature rose to 101° F. in the evening. Various X-ray photographs were taken on Nov 1st 3rd 5th and 6th. On Nov 13th a barium-meal radiogram showed a large growth of the stomach extending into the liver near the cardia. The patient's condition on the 17th was now changing for the worse and on the 18th he had a hæmatemesis of four ounces. On Nov 19th he had obvious melenæ. From that time he became progressively weaker and he died on Dec 3rd.

Summary of X-ray reports.—As already stated a barium meal examination on Sept 20th produced no certain evidence of carcinoma of the stomach. On Oct 10th the oesophagus and large bowel were also examined without positive result. In making the thorotrast investigations the technique adopted was that described by Porritt (1934). The full course of 75 c.cm. was given. Twenty-four hours after 25 c.cm. the liver shadow appeared well defined and already showed large circular non-opaque

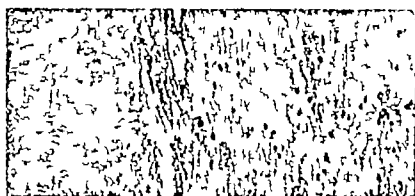


FIG. 1.—Section of liver with secondary growth. The right part of the section shows the liver tissue and the stained Kupfer cells packed with thorotrast. The tumour cells on the left contain no thorotrast. (x 100.)

areas. Maximum definition of these areas was attained on the films taken 72 hours after 75 c.cm. had been injected. These appearances were taken to be conclusive of metastases in the liver. On Nov 13th the stomach was again investigated and the film now gave convincing evidence of a new growth of the cardiac end.

POST-MORTEM FINDINGS

Large ulcerated growth in the stomach perforating into the "lesser sac" of the peritoneum with localised peritonitis. Massive secondary growths in the liver and gastrophrenic lymph glands. Small secondary growths in the kidneys.

On section the growth proved to be a spindle-celled sarcoma of uniform structure throughout both in the primary and in metastases. Thorium was present in the reticulo-endothelial cells of all tissues and was almost confined to these cells except for a little in some endothelial cells and fibroblasts in inflamed tissue (lesser sac). The Kupfer cells of the liver showed the largest amount of thorium (Figs 1 and 2) with the spleen bone marrow and lymph glands following in that order. There was almost none in the liver cells and none in the tumour cells (Fig. 2). In the lungs thorium was present only in one of the two phagocytes in the alveolar lumina.

There was much proliferation of the Kupfer cells of the liver and of the reticulo-endothelial cells of the spleen. A few of the thorium-containing cells in the latter were apparently disintegrating.

DISCUSSION

The immediate after-effects of thorotrast in this case are difficult to assess since the patient was gravely ill before the injection but at least no important immediate harm was done. The radiograms obtained with it made the diagnosis of secondary malignant disease definite although the diagnosis would have been established in any case by the second barium meal. But where the clinical evidence of secondary growth from a primary stomach

or bowel neoplasm is non-existent, thorotrast would be useful.

The pathological evidence in this case confirms previous observations that the reticulo-endothelial system is the main site of storage of thorotrast. Five weeks after injection the substance was present in only trifling quantities in other tissues and at that date the amount even in the liver parenchyma was very small. The histological picture described suggests some damage to cells of the system together with some proliferation. The rate of elimination is obviously extremely important in considering the possible risks in the use of thorotrast. The present case can do no more than indicate that apparently very little elimination occurred in five weeks. Examination of the various possible excretory tissues revealed scarcely any thorium. The largest amount was

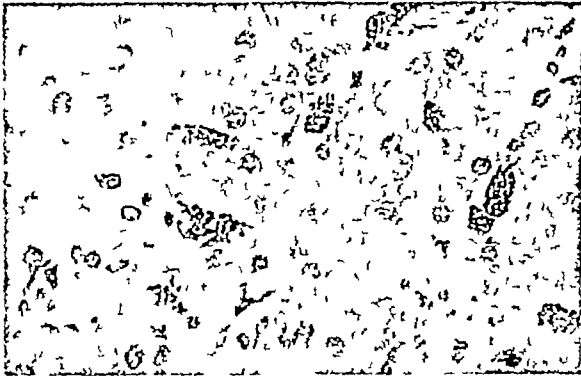


FIG 2—Section of liver showing Kupfer cells distended with thorotrast. The actual liver cells contain no thorotrast ($\times 425$)

found in the lungs, but even here the quantity was very small. If this be the main or only route of excretion it seems likely that complete elimination would take a very long time.

CONCLUSIONS

(1) In the single case recorded thorotrast was useful for the radiological demonstration of a gross hepatic lesion. (2) It produced no serious immediate reaction. (3) On the other hand the post-mortem findings suggested damage to the reticulo-endothelial system and very slow elimination. (4) We are not satisfied therefore that the use of this substance is desirable.

We are indebted to Dr John Gray (late director of pathology and Lylo Research Scholar at Queen Mary's Hospital, Stratford) for the pathological examinations and photomicrographs.

REFERENCE

Portt, A. E. (1934) *Proc R Soc Med* 27, 1295

ACUTE DACRYOADENITIS

By B. ROGOL, M.B. Dublin

HOUSE SURGEON, PRINCESS LOUISE KENINGTON HOSPITAL FOR CHILDREN, LONDON

INFLAMMATION of the lacrimal gland, whether acute or subacute, is so extremely rare that I am recording the following case—

A girl aged 8 presented herself at the casualty department of the Princess Louise Hospital on Jan. 25th, 1937, with pain and swelling in the region of the left eye. Two days previously the parents had noticed that the upper lid of the left eye was slightly swollen although the child herself did not complain. This state continued until the following night when the child did not sleep owing to intense pain. In the morning as the swelling was

considerable and the pain persisted, she was brought to hospital. Both left eyelids were swollen and it was almost impossible to open them because of tenderness on pressure, especially over the outer half of the upper lid. The palpebral conjunctiva was slightly injected and there was some chemosis. The temperature was normal. The parents refused to allow the child to be admitted to hospital so she was treated in the out-patient department by instillation of Argyrol 25 per cent twice daily and frequent hot fomentations. After two days the swelling was reduced sufficiently to allow of more thorough examination. By this time the swelling appeared to be greatest in the outer half of the upper lid. There was tenderness on pressure over this area and a nodular mass could be felt projecting from beneath the outer angle of the orbit. With the eye open the edge of this mass could be seen. Chemosis was now conspicuous and movements of the eye itself were limited in all directions. There was no proptosis. A diagnosis was made of acute dacryoadenitis.

The parents now allowed the child to be admitted to hospital (Jan. 27th). A swab was taken and the Koch-Weeks bacillus found. Argyrol was discontinued, hot fomentations were applied every two hours, and the eye washed regularly with weak saline. This was continued for four days without much improvement. The treatment was then changed to instillation of argyrol 25 per cent twice daily, hot fomentations, and washing with oxy-cyanide of mercury 1 in 10,000 every four hours. After several days on this routine there was definite improvement. Pain and tenderness disappeared though the gland was still palpable. The fomentations were then discontinued and the eye only bathed with oxy-cyanide of mercury three times daily till Feb. 7th when the patient was discharged with no signs or symptoms. The temperature had remained normal throughout. The condition thus resolved within a fortnight of its onset without suppuration.

I am indebted to Mr A. E. A. Loosely, ophthalmic surgeon to the hospital, for permission to publish this case.

ORAL ADMINISTRATION OF STOVARSOL IN CASES OF NEUROSYPHILIS CERTIFIED AS INSANE

By R. PAKENHAM WALSH, B.M. Oxon., D.P.M.
ASSISTANT MEDICAL OFFICER AND

A. T. RENNIE
LABORATORY TECHNICIAN, COUNTY MENTAL HOSPITAL,
LANCASTER

VERY little has been written about the use of Stovarsol by mouth in the initial treatment of general paralysis of the insane; only 3 cases have been recorded (Cady and Aitken 1933), and in these a mercury preparation was also given. Promising results in this disease, however, following injections of the sodium salt, have been described by several authors, notably Sézary and Barbé (1930, 1936).

Stovarsol first discovered by Ehrlich, is a pentavalent arsenical which can be given in tablets by mouth, or in injection of the sodium salt. It is a preparation of 3 acetvlamino 4 hydroxyphenylarsonic acid which is made in this country by Messrs May and Baker. Other preparations of the same compound are sold in England under the synonyms of Kharophen (Burroughs Wellcome), Orarsan (Boots) and Spirocid (Bayer). It is also referred to as acetarsol (British Pharmacopoeia Addendum 1935), Ehrlich 594, Fournieu 190, Acetarsonic Goul, Acetphenarsone, Orarsol, Orarsan, Paroxil, Stovarsol, Dynarsan, Arsaphen and Ovaloid. We give it the name stovarsol here because the May and Baker preparation was used throughout, having been supplied gratis by the makers for clinical trial.

In the title of this paper caution has been taken in the definition of the disease concerned. A certified

TABLE SHOWING SEROLOGICAL AND CLINICAL RESULTS OF TREATMENT OF G P I BY STOVARSOL

Sex age on admission.	Dates of lumbar puncture.	No of A-crain treats.	W R (C.S.F.)	Pandy protein per cent	Lange	Cells	Clinical notes
M 40	June 25th 1936 July 20th Aug 5th 17th 31st Sept 14th 26th Nov 10th 28th Dec. 7th 22nd Jan 19th 1937 Feb 1st	— 60 28 28 28 28 28 28 28 28 28 60 60 8	+++ +++ ++ ++ ++ +++ +++ ++ ++ ++ ++ +++ ++	0.06 0.06 0.04 0.04 0.035 0.03 0.035 0.03 0.03 Blood 0.04 0.03	5554310000 555 153200 544210000 544210000 5543200000 5432100000 0001321000 2453210000 555431100 555432000 555430000 5554321000 443210000	8 5 4 4 3 4 4 4 4 4 4 4 2	Duration several weeks. Chinese. Inted. garrulous and restless on admission. Settled down and became a useful ward worker
M. 40	July 9th, 1936 Aug 6th 18th 24th Sept 14th 28th Nov 9th 23rd Dec. 17th 4th 1937	— 70 35 35 35 35 35 35 60 35	+++ +++ +++ +++ +++ +++ +++ +++ ++ ++	0.03 0.035 0.04 0.04 0.04 0.045 0.035 0.04 0.035 0.04	5554321000 5555122100 555311000 5544321000 5543220000 5554321000 5555442200 5555551000 555321000 5554321000	10 8 10 9 8 6 4 5 4 3	History 2 months Melancholic suicidal confu ed and exhibiting mannerisms on admission Recovered except for hypochondriacal symtoms Became a very useful worker and was given ground parole (Now on material treat ment)
M 44	Dec 11th 1936 Jan. 14th 1937 Feb 1st.	— 39 39 40	+++ +++ +++	0.14 0.11 0.00 0.08	5555553443 5553543100 5553543100 555431000	80 10 16 10	History 5 months Improvement in gait and speech Stopped being noisy at night but otherwise no mental change
F., 43	Nov 27th 1936 Jan. 21st 1937	— 60	+++ +++	0.10 0.085	555 551210 5555432100	72 6	Slight mental and physical improvement.
M., 37	Jan. 13th 1936 20th Feb 2nd. 17th. Mar 2nd 10th 30th April 14th 27th May 12th 25th June 22nd July 6th 28th Aug 17th 31st Sept. 14th 8th Nov 9th 23rd. Dec. 7th Jan 19th 1937 Feb 1st.	— 33 33 33 35 35 23 35 35 35 35 70 70 — 35 35 35 35 105 11 35 70 35	+++ +++	++ ++	Blood Blood	42 30 12 8 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6	History 3 months Grandiose acutely hallucinated and very restless on admission Settled down and became a useful worker but is still labile He is a native of Africa, and malarial inoculation on July 10th 1936, failed to take after 4 weeks, during which period no stovarsol was given.
M. 40	Sept 2nd, 1936 28th Nov 4th 23th Dec. 7th	— 84 84 82 8	+++ +++ +++ +++ +++	0.00 0.045 0.035 0.04 0.08	5555421000 0001321000 554311000 5554411000 55 5131000	20 13 4 20 8	History 21 months Slight mental and physical improvement during period of oral treatment Stovarsol eventually stopped owing to diarrhoea but he subsequently tolerated injections of the sodium salt and further improvement was obtained First two "punctures" were of ternal
M 34	Dec. 1st 1936 Jan 19th 1937 Feb 1st	— 08 28	+++ +++ +++	0.11 0.08 0.055	5555351210 555432000 55551 0000	9 6 11	History 6 weeks Improving
M 62	April 2 nd 1936 May 6th 21st. 30th. June 28th July 6th Aug 20th 31st Sept 14th 19th	— 61 47 38 28 28 30 28 28 28 5	+++ +++ +++ +++ +++ +++ +++ +++ +++ +++	+++ +++ +++ +++ +++ +++ +++ +++ +++ +++	5555513100 5555421000 5543110000 5143210000 1121310000 0123110000 3 10000000 523110000 1121100000 0001100000 0000 10000	40 23 12 12 15 9 5 5 2 2 3	4 months history characterised by seizures Rest lessness and other acute symptoms rapidly subsided, and his speech, gait, and writing improved, but there was a residual dementia and fits recurred Subsequent malarial treatment was followed by a cessation of the fits but he remained partially demented
M 47	Mar 12th 1936 18th 21st April 14th 27th May 11th 22nd June 9th 23rd July 7th 21st	— 19 21 21 21 21 5 21 21 21 1 1	+++ +++ +++ +++ +++ +++ +++ +++ +++ +++ +++ +++	+++ +++ +++ +++ +++ +++ +++ +++ +++ +++ +++ +++	5555121000 55551 0000 5554420000 5543200000 00013 0000 1123130000 0001210000 5 142 10000 112310000 443321000 5514321000	51 52 20 20 10 4 9 9 2 3 22	History of poor health for 4 years and mental symptoms for years Advanced case on admis sion, almost moribund Oral stovarsol treatment was followed by temporary revival but he eventually died after seizures had become frequent
M 51	April 17th 1936 May 13th 25th June 8th 22nd July 7th 7th	— 33 31 31 31 31 31 22	+++ +++ +++ +++ +++ +++ +++	+++ +++ +++ +++ +++ +++ +++	5551 000000 0001310000 0001 210000 0012200000 0001221000 443321000 5514321000	20 20 14 9 8 4 4	History 1 month Health poor Melancholic type Mental symptoms improved but he died from an intercurrent disease Last "puncture" 1 ternal after death.

TABLE SHOWING SEROLOGICAL AND CLINICAL RESULTS OF TREATMENT OF G P I BY STOVARSOL —(continued)

Sex age on admis- sion	Dates of lumbar puncture	No. of 4 grain tablets	W R (C S F)	Pandy, protein per cent	Lange	Cells	Clinical notes
M, 38	Nov 20th 1935 29th, " Dec 12th "	— 30 30	+++ +++ +++	+ + ++	5555431100 5554320000 5554310000	95 32 21	History defective. Fairly advanced case. Restless and violent on admission. Acute symptoms rapidly subsided during oral treatment. Malaria three rigors later. Died.
M 40	Mar 10th, 1936 30th " April 14th " 27th " May 12th " 25th " June 8th "	— 28 28 28 28 28 28	+ ++ ++ ++ ++ ++ +	++ ++ ++ 0.08 0.04 0.04 0.045	5554210000 5554210000 5554200000 5554210000 5544310000 5544321000 5544310000	35 28 10 10 10 8 8	History 6 months. Restless confused grandiose and hallucinated on admission. Acute symptoms modified. Improvement in gait and speech. Income 'diminished from millions to hundreds'. He subsequently had a fit during a malarial rigor and died.
M, 51	July 3rd 1936 Aug 5th " 17th, " Sept. 1st, " 15th, " 20th "	— 72 21 21 21 21	++ ++ ++ ++ ++ ++	0.085 0.04 Blood 0.045 0.025 0.03	5553200000 5544310000 5433100000 4433100000 0013210000 0001421000	13 8 Blood 8 7 10	History 1 year. Fairly advanced case with upward plantar responses. Unfit for malaria. He became rapidly worse and died on Oct 10th, 1936.
M, 56	Nov 9th 1936 25th " Dec 7th " 22nd " Jan 4th 1937	— 40 28 13 16	+++ +++ +++ +++ +++	0.035 0.04 0.02 0.02 P M	5555421000 5554310000 5555421000 5555432000 5555432000	3 2 3 3 P M	History 5 years. Advanced case on admission with overflow incontinence. Later passed urine when requested. Relatively free from bedsores. Last 'puncture' distal after death.
M, 46	Nov 27th 1935 Dec 11th " 21rd, " Jan 6th 1936 26th "	— 30 28 28 28	+++ +++ +++ +++ +++	++ ++ ++ ++ +	5555421000 5443210000 4443210000 4433200000 4432100000	250 40 15 11 10	One week before admission he had two seizures. Restless and very weak on admission. Apparently recovered on oral treatment but on Jan. 31st fits recurred. Subsequent pyrexia and anti-syphilitic treatment failed to prevent further seizures and he died on April 15th, 1936.
F, 47	Oct 28th 1935 Nov 27th "	— 26	+++ +++	+ ++	5555421000 5555410000	21 20	Improved appetite and physically.
F, 18	Oct 5th 1935 Dec 13th, "	— 49	+++ +++	++ ++	5554221000 5544210000	14 Blood	Improved appetite and physically (Congenital type).
F 38	May 25th, 1936 June 12th "	— 21	++ +	0.065 0.075	5555432100 5554321000	18 12	No improvement. Treatment stopped owing to intolerance.
M 49	June 25th 1936 July 20th, " Aug 6th " 18th, "	— 75 35 35	+++ +++ +++ +++	0.16 0.10 0.09 0.00	5555433200 5555543200 5555432000 5555432100	13 6 6 5	History 9 months. Less confused tremor of legs disappeared. Gait and writing improved. Residual dementia persisted after subsequent malarial treatment.
M, 46	Aug 12th 1936 Sept 1st " 15th, " 29th " Nov 2nd "	— 60 35 35 35	+++ +++ +++ +++ +++	0.09 0.045 0.07 0.055 0.05	5555543100 5544332000 5554310000 5555421000 5544210000	25 13 7 9 9	History 4 months. Although off hand and interfering on admission he became more amenable and started work. Further improvement after malaria.
M, 44	Jan 6th, 1936 27th, " Feb 10th, "	— 28 28	+++ +++ +++	++ ++ ++	5555432100 5544321000 5544321000	54 30 10	Improvement in gait and speech. No longer antagonistic towards daughter.
M 55	April 20th 1936 27th " May 11th "	— 28 28	Neg " "	++ + +	5555431000 5555431000 5554210000	20 12 7	He became less restless, steadier on his legs, and clearer in speech. C S F on May 11th 1936 gave +++ Meinicke (C.M.H. Hereford lab).

mental patient admitted to a mental hospital exhibiting the characteristic serology of general paralysis may still be suffering from the meningovascular condition. Biggart (1936) states that he has found 20 per cent of cases diagnosed as paresis to be examples of cerebro spinal syphilis. This distinction is of importance when estimating the value of a new chemotherapeutic remedy in alleged cases of general paralysis, since one must bear in mind the readiness with which meningovascular cases respond both clinically and serologically to ordinary antisyphilitic treatment. In fact it has even been suggested that a serological response to such treatment excludes a diagnosis of general paralysis (Greenfield and Carmichael 1925).

In the present investigation all the patients had been certified as insane, and the predominance of mental symptoms indicated that the lesions were parenchymatous rather than interstitial. The cerebro spinal fluid changes moreover, provide striking evidence of the antisyphilitic value of an oral remedy, whatever the exact nature of the pathological lesions may have been.

Owing to the small number of cases in this series

and the short periods of time over which the treatments extended, this paper is presented mainly as a laboratory report, the clinical results being only briefly indicated in the Table.

COMMENT

Stovarsol given by mouth, if its action could be proved, would be an ideal remedy in neurosyphilis because it is so easy to administer, especially to out patients. On the other hand, several toxic effects may be produced, requiring the use of calcium thiosulphate (McLachlan 1933) as an antidote, and this had to be given on a few occasions in the above series. The symptoms produced, however, are dramatic and unlikely to escape the notice of the nursing staff, whereas the insidious onset of blindness sometimes observed with Tryparsamide, is a rare complication (Szárv and De Font Réaulx 1935; Szárv and Barbé 1932). Strict attention to dosage probably does much to prevent ill effects, and the scheme adopted here was to give the drug only on alternate weeks, the number of tablets given daily being regulated approximately by the body weight. Thus patients weighing 11 st, 9 st, and 7 st would

receive 5 4 or 3 tablets (each of 4 grains) respectively. Slight variations of this scheme became desirable when there were complications, but in only two cases did it become necessary to stop the treatment altogether for this reason. As a rule however the stovarsol was stopped on account of malarial inoculation. In some cases it was used later to terminate the induced fever but its action was found to be less prompt than that of quinine.

A comparison of the data set out in our Table with those from a control series of untreated cases was impracticable, but two papers (Barbé and Sézary 1924 Targowla 1924) on the spontaneous modifications of the cerebro-spinal fluid in general paralysis make it evident that consistent changes towards the normal must be attributed to the treatment. Moreover the results compare very favourably with the laboratory reports following treatment with malaria (Grant and Silverston 1924) or trypanamide (Lorenz and others 1923 Bedford and Fleming 1928) both of which methods appear to be standing the test of time. The parietic curve however appears to have been relatively stable when other specific drugs have been given in the absence of induced pyrexia (Fordyce 1926 Halloran 1924 Hearn 1922 Yorke and Murgatroyd 1936 Stokes Miller and Beerman 1931).

The Table illustrates to some extent the different stages of the *übergangsbefund* referred to by Dattner (1933 1935)—namely successive return of first the cell count then the protein and finally the colloidal reactions to normal as the result of treatment. It will also be noted that slight reduction in the strength of the Wassermann reaction has been recorded in some cases.

CONCLUSION

The serological results in 22 cases of general paralysis treated with stovarsol by mouth warrant further trial of this method. The clinical results although favourable in some cases do not at present justify any conclusions.

Our thanks are due to Dr R. P. Septon (medical superintendent) and Dr J. D. Silverston (deputy medical superintendent) for their kind assistance and permission to submit this work for publication to Messrs May and Baker for providing the stovarsol; and to Mr G. Hannah who carried out valuable work during the investigations.

REFERENCES

- Barbé A. and Sézary A. (1924) *Rev. neurol.* 31 460.
Bedford, P. W. and Fleming G. W. T. H. (1928) *Rep. Brit. Contr. Lab.* 15 60.
Bignetti H. (1936) Pathology of the Nervous System. Edinburgh.
Cady, L. D. and Alken L. F. (1933) *Urol. clin. Rec.* 37 434.
Dattner, B. (1933) *Moderne Therapie der Neurosyphilis*. Vienna.
Fordyce, J. A. (1926) *The Human Cerebro-spinal Fluid*. New York, pp. 507-513, 514.
Grant, A. R. and Silverston J. D. (1924) *Lancet* 1, 510.
Greenfield, J. U. and Carmichael, E. A. (1925) *The Cerebro-spinal Fluid in Clinical Diagnosis*. London, p. 164.
Halloran R. D. (1924) *Brit. med. J.* 190 65.
Hearn R. (1922) *Brit. med. J.* 2 37.
Lorenz, W. F. Loewenhardt, A. S. Blockmann, W. J., and Hodges F. J. (1923) *J. Amer. med. Ass.* 80, 1407.
McLachlan, A. E. W. (1933) *Brit. med. J.* 1 916.
Sézary A. and Barbé A. (1924) *Les traitements modernes de la paralysie générale*, Paris.
— (1935) *Bull. Soc. méd. Hôp. Paris* 48 388.
— (1936) *Int. Clin.* 1 130.
— and De Font Réaulx, J. (1933) *Ann. Derm. Syph., Paris* 4, 289.
Stokes, J. H., Miller T. H. and Beerman H. (1931) *Arch. Derm. Syph.* 1 23.
Targowla M. R. (1924) *Bull. Soc. méd. Hôp. Paris* 40 1537.
Yorke W. and Murgatroyd F. (1936) *Brit. med. J.* 1 1042.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF RADIOLOGY

At a meeting of this section held on April 16th the chair was taken by Dr DOUGLAS WEBSTER, the president and Dr HARRISON ORTON read a paper prepared by Dr COURTNEY GAGE on some of the less common lesions and special methods of

Investigation of the Alimentary Tract

and the influence of adjacent organs. Dr Gage had first considered sarcoma of the stomach which he believed could be distinguished from carcinoma when it was of the sessile type of myosarcoma growing into the lumen. The prognosis of this type was excellent. Myosarcomata might protrude into the lumen or burrow into the wall and distort the organ like an extrinsic growth. These growths like sarcoma as a whole might appear at any age between 8 and 80, being commonest about 40 though the peak for lymphosarcoma came earlier. They most often originated close to but not on the curvature and did not cause obstruction at either orifice. They were liable to degeneration and might become nodular from cyst formation. Pain might be prominent but cachexia and anæmia were less marked than in carcinoma. Bleeding was rare except from the myosarcoma projecting into the lumen. The radiologist was responsible for diagnosing these removable growths. Malignancy was low. The shape was that of a slightly squashed sphere or tangerine; the tumour might be pedunculated or sessile. Rupture through central necrosis produced a single deep

bleeding ulcer. Barium was trapped between the tumour and the gastric wall, causing a characteristic picture. Rugæ were pushed away on either side and smoothed out over the tumour. Smooth and regular if not ulcerated. Peristalsis would pass over a pedunculated tumour and go right up to a sessile one.

Retropentoneal hernias especially those into the duodeno jejunal fossa were Dr Gage's next subject. They were he thought more common than the literature indicated and were not always diagnosed as the cause of duodenal ileus. Lord Moynihan had described nine fossæ in this region but they could not be differentiated radiologically. Symptoms of obstruction varied from occasional colic to an acute emergency. Every case of duodenal ileus extending to the left of the midline should be regarded as of grave import and examined in detail. The intestine might appear as if wholly enclosed within a bag. Smaller ones might show only stasis in a knuckle of gut near the junction. Differentiation from diverticulum was easy: the barium shadow was not uniform and the gut line was continuous. Nor was the site a common one for diverticulum. Unusual causes of duodenal ileus included annular carcinoma of the third part of the duodenum and carcinoma just beyond the junction.

Crohn's disease had been described under various titles before its entity had been established by Crohn and his colleagues. The common site was the terminal ileum but the condition might occur elsewhere. Non-specific chronic inflammatory granuloma of the intestine was the best title. It was a multiple lesion usually found in young adult and in

males but recorded in both sexes and many ages. The part was increased in size, rather rigid and firm, presenting a sausage like tumour. Granulation tissue was found in all layers of the wall. The mucosa might ulcerate and perforate or be so swollen as to cause obstruction. The clinical picture varied with the site and the presence of acute, subacute, or chronic inflammation or obstruction. Acute cases suggested appendicitis. The string sign might be seen in radiological examinations of chronic cases. Examination of the small intestine required a special technique. Linear ulceration of the mucosa along the mesenteric border with tendency to perforate there was the most characteristic sign if it could be shown up radiologically as serrations. Adhesions were uncommon even with mesenteric abscess. The thickened gut might be freely angulated on the cecal wall or might even indent it, proving the freedom of the cæcum from involvement. *Ascaris lumbricoides* could be demonstrated by hourly radiograms, the opaque food filling the gut of the worm.

Dr S COCHRANE SHANKS pointed out that unusual methods were essentially experimental and difficult to assess. The true lateral view, with air as the medium and the patient blowing his nose, was a valuable technique for the pharynx. Oesophageal mucosæ might be difficult to demonstrate, but for varices a thick barium water cream was best. For the stomach a useful medium was a thick colloidal barium water cream, which mixed better with the juice and gave a better coating than tragacanth mixtures. Air inflation might give a good picture of polyposis and fundal tumours, but was contra-indicated in gastric ulcer from fear of perforation. For fundal tumours the gas bulb was sufficient. Spasm could be counteracted by benzamine sulphate. The pancreas was difficult to examine and a number of methods might be needed according to the lesion. Barium enemata might give evidence of steatorrhœa in chronic pancreatitis. Twining used the barium meal, taking lateral views of the supine patient to show the posterior incisura—a triangular filling defect—produced by the normal pancreas, and the influence of tumours on it. Gastric inflation might be used in pancreatic investigation to study the space between stomach and spine, but Twining's method was the better. Cases of acute obstruction should be radiographed lying supine in bed with the Schonander grid which showed fluid levels well.

The small intestine was generally well seen in the prone view, but sometimes Gage's technique was needed: a small barium water suspension meal was given (4 oz) and the patient kept prone throughout the five or six hours of the examination. This kept the distribution even. Radiograms were taken hourly in full inspiration. Another of Gage's methods was to fill the colon per anum and inject lipiodol through a urethral syringe to show up fistula. For gastro-colic fistula the enema method was better than the meal, as the flooding of the stomach with the enema was conclusive. Stierlin's sign was supposed to be due to a spasm of the cæcum but might be partly due to organic narrowing, the meal should therefore be followed by an enema, when the spasm might relax. The triple contrast method for study of the colonic mucosa must be preceded by complete evacuation for which the Sude chair was the best irrigation method. A colloidal preparation was the best. The thorium three stage enema was a variant. Thorium deposited better than barium in the colonic mucosa. As little of the medium as possible should be given and that intermittently. There were many

failures. No deposition or irregular deposition might result, or the bowel might fail to empty. Pittressin helped to produce emptying. The appearances of the first stage were those of the ordinary enema, except that the colon was less distended. After the vacuation the colon was plicated, showing haustration, and transverse and longitudinal plication. An irritable colon showed small plicæ, asterisk or honeycomb pattern appeared in polyposis or diverticulitis, and absence of plicæ in grave ulcerative colitis or neoplasm. After the air injection the calibre, contour, and anterior and posterior walls *en face* should be observed.

Dr R S PATERSON said that anatomical variations were most often due to failure to descend or to rotate. Faulty fixation might produce hypermobility. Intussusception was usually associated with a polyp or small growth in adults and was revealed by sudden arrest of the enema at the tumour, tailing off of the shadow into a fork, and sometimes a thin streak of barium through the intussusception. The barium enema in some cases cured the condition. Simple colitis in the acute stage might make the bowel too irritable to retain the enema, the lumen was much narrowed, and the line of barium might be no thicker than a lead pencil. Accurate pictures of the mucosa, if obtainable, gave a characteristic tufted pattern. In more chronic forms the spasticity and irritability became reduced and the colon appeared as a parallel walled tube with no haustra. Often the enema flowed unusually quickly. Notching had been described as representing ulcer craters, but was an unusual finding. The diagnosis of colitis was really clinical. Polyps might occur anywhere, and vary from a large single one, causing filling defect, to a condition of polyposis which gave a characteristic marbled shadow effect beautifully shown by the double contrast method. Certain foods gave an identical appearance, and retention of fæces also caused diagnostic errors, preparation for the enema should therefore be very thorough. In conclusion, Dr Paterson showed radiograms of a case where a barium enema very satisfactorily converted a breech presentation into a vertex.

Dr G B BUSH spoke of displacements due to extrinsic causes below the diaphragm. Routine investigation would sometimes reveal unsuspected enlargements under the costal margin, in the pelvis, men obese patients. The examiner must appreciate laboratory normal variations and must know the brief indications of the peritoneum and the abdominal masses. Enlargements of the spleen cause the stomach and cause an indentation.

Stovarsol, new growth of the greater curvature, pushed the splenic flexure down. Renal tumours had variable effects on the stomach, a large growth might push the stomach down and to the left and indent the lesser curvature, and also displace the descending colon forwards and inwards, without affecting the flexure. Retroperitoneal neoplasms displaced the stomach. Enlargements of the head of the pancreas—cysts or growth—played out the curve of the duodenum. Enlargements of the liver depressed the duodenum and were unmistakable. The gall bladder was occasionally displaced by a liver cyst. Many tumours affected the transverse colon and flexures. Pelvic swellings gave interesting displacements of the mobile sigmoid, but reduction in its mobility must be demonstrated to verify true displacement. Pregnancy had little effect on the sigmoid because the uterus at first enlarged at right angles to the plane on which the colon was visualised.

ovarian cysts pushed the sigmoid up and uncured the S bend. An enormous lipoma originating under the diaphragm had displaced the stomach and colon right over to the right side.

LIVERPOOL MEDICAL INSTITUTION

At a meeting of this society on March 18th with Prof R E KELLY the president in the chair a paper on

Lobectomy

was read by Mr HUGH REID. He outlined the common indications and complications of lobectomy and illustrated the technique by means of a colour film. Only recently he said had the mortality of this operation been so lowered as to bring it within the region of practical surgery. Brunn had described the one-stage operation in 1920 and although various refinements had been added his fundamental principles had not been altered and this was the method adopted by Mr Reid himself. He pointed out, however, that the one-stage operation had not been accepted by everyone for every case of lobectomy. Alexander for instance had made out a very good case for the two-stage method, particularly as regards complications. The greatest field for Brunn's operation was in bronchiectasis and in carcinoma of the lung. It had been shown that if the whole lung was removed from one side the empty cavity filled up with a reticulated fibrin while the remaining lung increased in size by hyperplasia and hypertrophy without emphysema the mediastinum being pushed over the ribs on the affected side falling in and the diaphragm rising in an attempt to obliterate the cavity. If only one lobe was removed it was surprising to notice that after a few days the remaining part of the lung had enlarged to obliterate the cavity completely.

Dr N B CARON spoke of the great benefit that a patient of his had received from the operation described and referred to other cases in which still more extensive lobectomy had been successfully performed. The cases required careful diagnosis and selection with full investigation of the supposedly anaesthetic or obese in order to avoid disappointments. As the course of medical treatment with possible anaesthesia should be given a thorough trial before a lobectomy was undertaken. The ideal was of course a mild diaphragmatic chest when ever possible and more resembling a child to be made to attain this.

Dr ROY also agreed that to advise lobectomy was a serious responsibility. The physician in charge of a patient with bronchiectasis was in a difficulty. On the one hand the operation was a severe one with a high risk—though with the development of their technique surgeons skilled in lung surgery were now achieving far better results especially in the young. On the other hand the natural history of the disease made it certain that many a patient with bronchiectasis though reasonably well at the moment would in perhaps five or ten years time be a distress to himself and to those about him. To wait until the patient and his friends were desperate before advising operation was fair to neither patient nor surgeon. By that time an originally unilateral bronchiectasis might have become bilateral, with widespread damage to the lungs and in any case the patient would be a poor subject for surgery. If operation was to offer any chance of cure it was the duty of someone with expert knowledge of the disease to advise it after full careful and unbiassed consideration at a time when the

patient was fit enough to have a good chance of recovery from an extremely severe procedure. That is the very time however when there was a temptation to carry on with merely palliative treatment for while the doctor knew the course and future of the disease the patient and his friends could hardly grasp it. With the modern advance in lung surgery the physician could feel reasonably happy in passing on young and otherwise healthy subjects to the competent thoracic surgeon. With older patients there was still need for the utmost caution in weighing up the pros and cons of surgical treatment with a bias at present against it. In spite of occasional recorded cases of lobectomy or total pneumonectomy for bronchial carcinoma, both physicians and surgeons would agree from actual experience that the number of cases suitable for this procedure must be very few indeed.

Mr H V FORSTER said that Frenchner of Stockholm had described a close fitting bronchial catheter and an ingenious instrument called the spiropulsator which could be used for positive pressure narcosis to one lung alone. These instruments might be useful in the operation of lobectomy or pneumonectomy. The laryngologist had been a pioneer in the study of lung disease by bronchoscopy but now he saw how these aids were being employed by the physician or surgeon himself. Possibly the bronchoscopist by helping to avoid pulmonary atelectasis in children would be able to contribute to the prevention of established bronchiectasis.

The Value of a Bronchoscopic Clinic

Mr J E G MCGIBBON and Dr E T BAKER DATES contributed a joint paper in which they described the difficulties of accurate diagnosis in certain cases of pulmonary disease even after the most careful clinical examination and investigation. If bronchoscopy was properly carried out under local anaesthesia it was a safe and harmless procedure even in the presence of serious lung disease. They then reviewed the work and methods of the bronchoscopic clinic of the Royal Southern Hospital Liverpool. The number of foreign body cases was small. Suspected bronchial neoplasm pulmonary suppuration such as bronchiectasis and lung abscess dyspnoea due to tracheal and bronchial obstruction collapse of the lung recurrent haemoptysis of obscure origin and certain doubtful cases of asthma, all called for bronchoscopic inspection and appropriate treatment when possible and formed the bulk of the work of the clinic. Foreign bodies were classified as radiologically opaque and radiologically non opaque and with regard to their composition as organic and inorganic. The organic foreign body cases were dramatic and serious and called for immediate removal. Several cases of non-opaque organic foreign bodies were encountered which had previously been thought to be lung abscess unresolved pneumonia and new growth. Bronchoscopy revealed an unsuspected foreign body removal of which brought about resolution of the lung condition and cessation of symptoms in the majority of cases. Careful investigation whenever possible by direct radiography and with Lipiodol was essential in the cases under haste in attempts at unskilled removal proved as great a source of danger as the foreign body itself. Pulmonary suppuration in the widest sense was next discussed; it was necessary to bronchoscope all cases of unresolved pneumonia localized non tuberculous pulmonary fibrosis lung abscess and bronchiectasis, in order to exclude suppuration and pneumonitis distal to simple and malignant bronchial

neoplasms and foreign bodies True unresolved pneumonia and localised non tuberculous pulmonary fibrosis were rare in their experience and, in most cases referred to the clinic with this diagnosis, a cause such as foreign body or new growth had been found The diagnosis should only be accepted with caution after a process of exclusion, especially in the adult The results of bronchoscopic aspiration and lavage in chronic lung abscess and bronchiectasis were in their experience disappointing and no better than that obtained by postural drainage when properly carried out Simple new growths were rare, all cases discovered during life had been revealed by bronchoscopy and what had been thought to be an extremely rare condition might prove to be much commoner when bronchoscopy is more generally employed in obscure lung lesions The majority of these growths were curable by endoscopic methods—simple removal, diathermy, and radiation—but if left untreated they ultimately gave rise to serious secondary effects Angiomata and fibromata had been seen and treated successfully at the clinic Malignant bronchial new growths were common, by bronchoscopy their diagnosis could be made beyond doubt In cases with suppuration distal to a bronchial occlusion by growth, the process of dilatation with bougies of a carcinomatous stricture, removal of exuberant portions of growth by biting forceps, and the introduction of radon seeds or a radon tube lead in certain cases to re aeration of the collapsed portion of lung and drainage of secretions By such means the complicating suppurative lesion was usually relieved, the toxæmia lessened, and the sufferings of the patient were minimised Cure, of course, was impossible at this stage, and probably would remain so in view of the situation of the growth and its mode of spread into the lung parenchyma and mediastinum In early cases of bronchial carcinoma the clinical and radiological findings were negative, and the patients looked well, recurrent hæmoptysis was the only presenting symptom If any successful treatment were possible for this terrible condition, its success would depend on early diagnosis, and for this bronchoscopy was essential A case suitable for lobectomy had not yet been seen In some cases the diagnosis of malignant disease had been disproved by bronchoscopy and foreign bodies removed Except in cases of emergency, bronchoscopic examination should always be preceded by complete clinical and radiological examination including lipiodol bronchography The cases should be followed up, when the significance of unusual findings could be assessed, as it was not always possible to remove suitable fragments for pathological examination Bronchoscopy would always remain team work, and it necessitated the closest liaison between laryngologist, physician, and radiologist in a well equipped clinic to which cases would be sent from a wide area

Mr FORSTER said he would like to understand better the value of the diathermy cautery as used in a bronchus when compared with the insertion of radon seeds in cases where the obstructing growth had not been proved to be malignant Some cases after operations on the upper abdomen by the general surgeon used to develop other pneumonia, at least in his early student days The inhibition of diaphragmatic respiration had something to do with this The laryngologist rarely saw such complications in spite of the greater danger in his operations of inhalation of blood and secretions He had not met a case of lung abscess after these operations in the practice of his teachers and so far had been

spared the complication in his own Further, he had found the asthmatic patient stood either marvellously well though he had seen an asthmatic paroxysm under nitrous oxide

Mr COURTENAY YORKE said that in his opinion the principal use of the bronchoscope would always be the removal of foreign bodies, of which very many are not opaque to X rays and quite unsuspected He felt dubious as to the value of radon seeds in the treatment of bronchial carcinoma The inaccessibility of the lower edge of the growth and the limitations of radon seeds both in range and duration of action made him feel that on the whole the possible temporary relief would hardly outweigh the risk and discomfort involved in their insertion Malignant disease in the larynx was a hundred times commoner in men than in women, and he thought, on that account, an inquiry into the relative sex incidence in bronchial carcinoma would be very interesting and might raise important questions in regard to ætiology

Dr V COTTON CORNWALL said that in investigating the cause of hæmoptysis, bronchoscopy was sometimes the only means by which a correct diagnosis could be made He quoted a case at Fazakerley Sanatorium where all investigations, including bronchography, had been negative and bronchoscopy had revealed a bronchial carcinoma

MANCHESTER MEDICAL SOCIETY

At a meeting of this society held on April 7th, with Mr GARNETT WRIGHT, the president, in the chair, Dr S W PATTERSON spoke on

Neoplasm of the Colon

In presenting the results of an investigation of 82 cases of carcinoma of the colon and rectum he said that Sir Edmund Spriggs had during the last few years analysed the admissions to Ruthin Castle of patients with diseases of the colon and had collated and published papers on diverticulitis, ulcerative colitis, and functional disorders of the colon Amongst the 82 cases of cancer of the colon and rectum in the series 68 were in the various parts of the colon and 14 in the rectum Two thirds of the cases had occurred in men The average age was 62 years, 64 for men and 57 for women The age of most lay between 50 and 70, five were under 50 years old and eight were over 70 The sigmoid and pelvic colon were the parts of the colon most affected The length of history ranged from a week or two to three years, but was usually a few months The lesion was sometimes well advanced before it caused any sign or symptom

The symptoms at onset were divided into five main forms (1) increasing constipation, (2) irregular stools or looseness, colitic type, (3) pain, usually above or below the navel, but occasionally in the back thighs, or rectum, (4) upper abdominal discomfort or nausea, sometimes related to food-dyspeptic onset, (5) the early passage of blood from the rectum There might be an overlapping of two types of onset in the same patient In some cases the onset was insidious and the bowel symptoms were almost negligible until some other condition led to the investigation of the digestive tract, as in a patient with recurring lumbago which was found to be due to a secondary growth in the bodies of the eleventh and twelfth thoracic vertebrae, originating in a carcinoma of the descending colon Of the 14 cases of carcinoma of the rectum the age at the onset of symptoms varied from 37 to 75 years. The took the form of a frequent desire to stool or diarrhoea

in 11 constipation in 2 and epigastric pain increased after meals in 1. Two only had noticed no blood in the motion. 5 had suffered serious loss of weight and in 1 man pain with micturition was an early and troublesome complaint. In the diagnosis the triad of constipation more or less associated with diarrhoea and hemorrhage was characteristic but only half of the patients with cancer of the colon complained of serious constipation and constipation might occur in ordinary intestinal stasis. Bleeding from the bowel occurred in 80 per cent. of the patients and was not seldom ascribed to piles.

Amongst the general symptoms loss of weight and anaemia were predominant. The anaemia might be severe in cases of carcinoma affecting the proximal colon without much obvious blood occurring in the motion whereas in cases affecting the distal colon where blood and mucus were common anaemia was not a prominent symptom. In all cases rectal and sigmoidoscopic examination should be carried out. The patients might thus complain of dyspepsia or general malaise usually with colitic symptoms: constipation diarrhoea pain stoppage or hemorrhage, but always a change in the character of the motions. Dr Patterson illustrated the radiological diagnosis by a series of X ray photographs and diagrams. In differential diagnosis the age factor was one which had to be considered.

In regard to treatment full discussions from the surgical point of view had been published in the weekly medical journals during the last few years by Sir David Wilkie H. B. Devine H. H. Rayner and E. K. Martin. In the present series excision was carried out in 13 of the cases of carcinoma of the colon and 2 of carcinoma of the rectum. Colostomy was done in 15 and 10 cases respectively while a short circuit without removal was possible in 9 of the colon cases. A consideration of the length of history with the results of surgical treatment showed that if advice had been sought earlier and a diagnosis made many more lives could have been saved.

In the subsequent discussion Dr R. W. LUTTON, Prof. MORLEY Mr. RAYNER and the PRESIDENT again stressed the importance of early diagnosis and attention to the commencing disturbances of the bowel.

REVIEWS AND NOTICES OF BOOKS

Practitioners' Library of Medicine and Surgery

Vol. XI *Eye Ear Nose and Throat* Supervising Editor GEORGE BLUMER M.A. M.D. David P. Smith Clinical Professor of Medicine Yale University London; D. Appleton Century Co. 1937. Pp. 1153. 50s. (in sets only).

This imposing volume has been compiled by over forty American specialists many of whom are well known and respected in this country. It possesses the merits and the defects of most of such compilations. On the one hand there are chapters by distinguished authorities on subjects they have made especially their own and on the other there is overlapping and unevenness with not a few omissions. Thus no mention is to be found of inflation of the ear by the method of Politzer nor through the Eustachian catheter in the treatment of recent catarrhal deafness and the technique of the introduction of the catheter is nowhere described. Indeed in the discussion of acute catarrhal otitis media Creighton Barker visualises an inflammation accompanied by fever pain and usually perforation of the drum rather than the common cold in the ear associated with deafness and fullness for which inflation is valuable. An instance of overlapping is the description by R. E. Buckley of cancer of the larynx followed by a chapter on the same subject by Louis Clark. In the latter only the operation of laryngoscopy is described while Buckley says that the results of radium therapy have been so poor that its further use in the treatment of cancer of the larynx should be absolutely discouraged. The brilliant results obtained in England by the introduction of radium according to the fenestration method of W. D. Harmer and A. G. Finkel might with advantage be more widely known and practised in the United States.

A. Kopetzky has contributed a beautifully clear and helpful exposition of the application of physiology and pathology to the study of suppurative lesions of the middle ear which together with the preceding chapter by D. M. Jerlo and J. J. Lotter forms an admirable basis for the understanding of inflammatory processes in this region. Acute suppuration of the ear is discussed in four separate chapters;

the importance of the subject may be sufficient excuse for the lengthy treatment but the mass of reading is uninviting and curtailment should have been possible. The section on diseases of the eye is very complete. The scope of the book is not intended to include descriptions of those operative procedures for which the equipment of a specialist is required; nevertheless those employed in the treatment of cataract and glaucoma are fully discussed and illustrated as also is the operation of lateral pharyngotomy for cancer of the laryngopharynx. The work is not a text book but rather a collection of excellent essays on these special subjects which well deserves a place in the practitioner's library.

Electricity in Therapeutics

By HAROLD H. U. CROSS Ph.D. formerly Research Worker at the Stanford University California; Certificate Electro Radiology Faculty of Medicine Paris. With a Preface by Dr G. LORON BOURGIGNON. London Crosby Lockwood and Son 1936. Pp. 378. 25s.

This book does not deal entirely with electrical treatment. There is a chapter entitled The Elements of Electro diagnosis and a considerable portion of it is devoted to the chronaxie and its determination. A short chapter has been written on ultra violet ray treatment and there is a brief résumé of infrared ray therapy. This book has been written to supply such technical information as will show the student and practitioner the underlying electrical and chemical principles of electricity in therapeutics. It includes much more however than technical information. Methods of subjecting patients to the different physical agents and various ways of treating disease by their means are also described. Dr Cross refrains from expressing his own views on the selection or prescription of treatment but he describes a few of the cases which he has treated. Considerable attention is given to the galvanic current and its therapeutic uses. The chapter entitled transcranial ionization will be of especial interest to British readers. This form of treatment was introduced by Bourguignon. It is recommended for long-standing cases of hemiplegia with con-

tracture For cases of facial paralysis, especially those with contracture, indeed, it is said to be a "sovereign remedy" The section of the book devoted to high frequency currents is much smaller than that concerned with the galvanic current and its uses Generators, electrodes, and accessory apparatus are fully described, but only ten pages are allotted to the medical and surgical applications of high frequency currents The work conducted in this country on the diathermic treatment of the pelvic organs does not appear to be mentioned, although there is a description of Sloan's method of treating cervicitis and vaginitis by ionisation The author also describes the use of ultra violet rays and quartz applicators in the treatment of urethritis, erosion, vaginitis, cervical catarrh, leucorrhœa, and gonorrhœa

One form of treatment said to be used with benefit in inflammatory conditions is not regularly practised in this country High frequency currents derived from a high voltage source are applied by way of glass or quartz electrodes of various shapes and sizes to the skin or introduced into such channels as the nose, rectum, or vagina The current is said to exercise a "revulsive" action The risk of breakage of the electrode *in situ* is mentioned Should this happen the operator is instructed to keep the patient calm and flood the canal with warm olive oil, to remove pieces with forceps and reassemble as nearly as possible to ascertain that all has been recovered

There are three appendices One is a selected bibliography, another contains a number of diagrams showing the motor points of muscles and nerves with descriptions of the action of the muscles, and the third gives advice on the resuscitation of those who have apparently been electrocuted

Kidney Pain

By J LEON JONA, D.Sc., M.D., F.R.A.C.S., M.C.O.G., Hon. Assistant Gynaecological Surgeon, Women's Hospital, Melbourne London J and A Churchill, 1937 Pp 95 7s 6d

RENAL pain of unknown origin is very commonly met with in practice, more especially among female patients It is therefore a subject of great practical importance, and the object of this little book is to bring before practitioners certain views on the causation of obscure renal pain and on its treatment Dr Jona has been working for the last ten years on the physiology and pathology of the renal pelvis, but unfortunately the outcome of his researches are still too theoretical to be of much use to the busy practitioner It is obvious, however, that he has read very widely on the subject and the extensive bibliography supplied will be of the utmost use to those concerned with this region A better title for the book might have been "Introduction to the Study of Renal Pain," for it will certainly provide an admirable survey from which further fruitful work may spring

Enzyme Chemistry

By HENRY TAUBER Ph.D., Consulting Chemist, New York Medical College and Flower Hospital London Chapman and Hall 1937 Pp 243 15s

THIS book will find a warm welcome in the libraries of chemists, biochemists and physiologists who require an up to date summary of our knowledge of the chemistry of enzymes and their mode of action Dr Tauber deals mainly with the actual chemical and physical nature of the enzymes rather than with their complicated action, and a book written on this aspect

of the problems presented has been badly needed for years There are many works on such subjects as the kinetics of enzyme reaction, and mathematical treatises on the many relationships of enzyme to substrate, but the worker who wants to find out anything about the actual chemical nature of the ferments themselves is faced with the need to make an arduous search through the literature

Even the most erudite among general biochemists will get some surprises when reading through the book For instance, it may well come as news to them that crystalline trypsin and pepsin have been prepared, and that ferments such as carboxy polypeptidases have been crystallised Dr Tauber has undoubtedly provided a most useful addition to the library of any worker whose interests are directly or indirectly concerned with enzymes

Complement or Alexin

By T W B OSBORN, University of Witwatersrand, London Humphrey Milford, Oxford University Press 1937 Pp 116 7s 6d

Dr Osborn has done a useful service in bringing together the available knowledge on the subject of complement in the form of a brief and well arranged monograph The work takes no new standpoint nor does it bring forward any new facts of importance but it is obviously written with real understanding of the subject, and if little criticism appears in the pages, a good deal, we imagine, has been expended on the omissions As Prof R A. Peters says in his introductory note, complement is a "mysterious and interesting" reagent It is also a very important reagent in practical laboratory work, and all who have to do Wassermann's or other fixation test will profit by reading this excellent account of its properties

1936 Year Book of Dermatology and Syphilology

Edited by FRED M WISE, M.D., Professor of Clinical Dermatology and Syphilology, New York Postgraduate Medical School and Hospital of Columbia University, and MARION B SOLZBERGER, M.D., Associate Professor of Dermatology and Syphilology at the School Chicago Year Book Publishers, London H K Lewis and Co. 1936 Pp 720 12s 6d

THE editors of this valuable publication, since its inception as one of 10 similar year books (including dentistry) in 1931, have adhered to the same programme and classification This volume has been enriched by abstracts from discussions and papers read at the ninth international congress of dermatology and syphilis held at Budapest in September 1935, an event which must have made still harder the selective duties of the editors As in former years they have themselves contributed an introductory essay on a subject of common therapeutic interest Last year they chose eczema in this issue they present a detailed survey of the treatment of urticaria in its acute and chronic manifestations, and any reader who has exhausted his armamentarium in an obstinate case of that disease may hopefully seek here some new measures for its alleviation or cure Among the more important extracts are those from papers dealing with the control and cure of syphilis, including two which present the results of treatment by Nepharsen—the new triarseneol for which reduced toxicity is claimed A special feature has been made of the recent studies and advances in the pathology of the virus disease

and those associated with disorders of the hæmopoietic and reticulo-endothelial systems

The table of contents is divided into 14 sections under which the editors have abstracted papers dealing with mycotic infections eczema allergy and immunology drug eruptions hamatogenous dermatoses miscellaneous dermatoses cancer leukaemia and allied conditions chronic granulomas other than syphilis non-syphilitic venereal diseases dermatological therapy physical therapy experimental studies and finally syphilis in all its various aspects. As an addendum to some of the more important communications and where they do not altogether agree with the conclusions of the authors quoted the editors have submitted criticisms or alternative views which will be found of considerable interest and occasional assistance. Dermatologists owe a big debt to the industry of those who have helped to collect and collate the best of the new work on diseases of the skin and have provided such a comprehensive and reliable annual.

1936 Year Book of Obstetrics and Gynecology

Obstetrics Edited by JOSEPH B. DELEE, A.M. M.D. Professor of Obstetrics University of Chicago Medical School. *Gynecology* Edited by J. P. GREENHILL, B.S. J.D. F.A.C.S. Professor of Gynecology Loyola University Medical School Chicago. Year Book Publishers London H. K. Lewis and Co. 1937 Pp 704 10s 6d

The appearance of the 1936 number of this year book reminds one of the continued and widespread activities of Prof. DeLee who edits the obstetric section of this book. His editorial remarks are characteristically trenchant and add to the general interest of his summaries of new work. Prof. J. P. Greenhill is responsible for the gynecological section which is no less well compiled. The volume is of handy size and provides an admirable review of the best of the year's work in this specialty chosen liberally from all parts of the world.

Health of the Mind

By J. R. REES, M.D. Director of the Institute of Medical Psychology London. Faber and Faber 1936 Pp 230 6s

Dr. Rees has brought his book up to date by the inclusion of a number of minor points in various chapters. The volume is designed to appeal not to the expert but to the intelligent layman, the school master and the spiritual guide. Technicalities are cleverly avoided and the skill of the exposition added here and there by diagram makes many a theoretical tangle seem simple. The chapter on childhood is a sound display of common sense. For those who tremble on the brink of suggesting psychological treatment for themselves or their friends this volume will be a disarming invitation. Since it is the Institute directed by Dr. Rees has reverted to its former honoured name and in future will again be known as the Tavistock Clinic.

Reactions of the Human Machine

By JOHN LERNBERT DENT London: Victor Gollancz 1936 Pp 288 8s 6d

This volume is frankly materialistic biology and from the very beginning determinism is the premise of the argument. Movement or reaction is a special quality in living things and having admitted this special quality it is not difficult to

build up a consistent dynamic structure of the organism of man in its individual and social reactions. The argument in fact is so very consistent that many apparently strange explanations fall into their place in the general scheme of the book. In many ways the author's thesis is an extension of the theories of Pavlov. It is with these theories in view that the book should be studied. Those readers who look for consistency and fidelity to biology in the study of mental medicine will find much stimulation in its contents. Neurologists in particular will look with favour upon it. Some few psychopathologists may be either irritated or scornful.

What Science Stands For

By Sir JOHN BOYD ORR, F.R.S. Prof. A. V. HILL, Sec. R.S. Prof. J. C. PHILLIP, OBE, F.R.S. Sir RICHARD GREGORY, Bt. F.R.S. Sir A. DANIEL HALL, K.C.B. F.R.S. and Prof. J. HOOVER, F.R.S. London: George Allen and Unwin. 1937 Pp 172 5s

SCIENCE represents the satisfaction of man's curiosity and in common life it stands on the one hand for the addition of many facilities and conveniences to his material existence and on the other for much of his intellectual and spiritual refreshment and inspiration. The first consideration appeals more to those who do not know by personal experience what science is the second to the initiates. Both points of view are represented to various degrees in the six essays of this symposium. All of them are well worth reading and most of them are sufficiently provocative; the happiest expression of what seems to be the real truth comes from the editor of *Nature*.

An Introduction to Medical Science

By WILLIAM BOYD, M.D. FRCP Professor of Pathology in the University of Manitoba London: Henry Kimpton. 1937 Pp 307 16s

Prof. Boyd has written three good books on pathology and he now adds a baby to the family. Despite its title it is an elementary text book of pathology intended for junior students, nurses, technicians and perhaps the lay public. It is not more attractive than the average infant and while it is certainly not bad it cannot unreservedly be called good. In places the writing is careless—e.g. in the account of rickets. It may well be of use in its special field until someone succeeds in the extremely difficult task of composing a better semi-popular guide without tears.

1 A Doctor at Work and Play

By SIDNEY H. SNELL, M.D. B.S. Lond. D.P.H. London: John Bale, Sons and Curlew. 1937 Pp 331 12s 6d

2 Scalpel and Sword

By Sir JAMES ELLIOTT, M.D. Sydney Angus and Robertson. 1936 Pp 215 7s 6d

1. It is the first of these books that the late Dr. Snell shows himself to have been possessed of the vigour and simplicity characteristic of the Victorian professional class. A Westcountryman who received his professional education at University College Hospital he contrived to combine a busy professional life with numerous outside interests and activities. Frequent travel, golf, sailing, big game farming and fox hunting were some of the things he found time for and in common with other horse-lovers and modern educationists he found that a spirit of

animal will sometimes go better in a snaffle than on a curb. The book, illustrated with photographs and abounding in anecdotes, is the straightforward and colloquial chronicle of a life remarkable perhaps for the quality and variety, rather than the rarity of the experiences packed into it. The reader is left with an impression of the author as an attractive person, full of energy, kindness, and the joy of living.

2 Sir James Ellhott writes with considerable literary skill and his adventures are set against a very different background. Educated at Edinburgh and perhaps a shade condescending towards the older universities he is delightfully reminiscent about his former teachers. As a doctor he saw service with a field hospital in the South African War and, during the late war, was senior medical officer on the ill-fated *Mahono*. Much of the book is concerned with an interesting account of the manners and customs of the Maoris and the author's gift for happy phrase is well exemplified in the chapter on America.

Snow on Cholera

Being a Reprint of Two Papers by John Snow, M.D. Together with a Biographical Memoir by B. W. RICHARDSON, M.D., and an Introduction by WADE HAMPTON FROST, M.D., Professor of Epidemiology, Johns Hopkins School of Hygiene and Public Health, New York. The Commonwealth Fund, London. Humphrey Milford, Oxford University Press 1936. Pp 191. 10s. 6d.

This reprint of Snow's classical papers on cholera has been published under the auspices of the Commonwealth Fund (New York) by "Delta Omega," an American society of public health, to whose interest we already owe a reprint of William Budd's *Typhoid Fever*. In addition to the second edition of Snow on the Mode of Communication of Cholera it contains his interesting paper on Continuous Molar Changes, an oration given to the Medical Society of London on its eightieth anniversary. The edition also includes the memoir on Snow's life by his friend Sir Benjamin Richardson which was originally published in the *Asclepiad* in 1887, and which is everything that a brief biography should be. A short introduction by Prof. Frost gives an informative and just account of Snow's place in the history of epidemiology. The apparatus is completed by a bibliography of Snow's works and a frontispiece portrait of Snow. The book is attractively got up. It includes the coloured maps of the original second edition (1854), typographically it is as near as possible a reproduction of the original and the binding and lettering are also reproduced. To the discriminating reader these details will add much to the enjoyment of owning and reading the book, which has obviously been published as a labour of love and is being sold at what must be below cost price. We can hardly think of a better gift for any young doctor interested in public health work than this edition of one of the most interesting and inspiring of the classics of hygiene.

Diseases of the Respiratory Tract

Eighth Annual Graduate Fortnight of the New York Academy of Medicine. London. W. B. Saunders Co. 1936. Pp 418. 24s.

THIS is a collection of lectures to post graduate students and practitioners by twenty one authorities on special aspects of respiratory disease. Such a collection could not be comprehensive and the lecturers have wisely chosen subjects rich in specu-

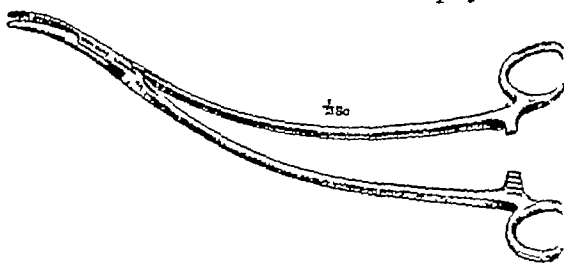
lative and controversial matter. The general standard of the various papers is high and reference must be made to one or two of particular interest. A lecture by A. R. Dochez on the common cold gives the recent evidence for the conclusion that the causative organism is a filter passing virus, in the writer's experience even after prolonged immunisation there is no diminution in the number of colds experienced, although there may be some decrease in severity.

Other papers of particular merit are those on bronchoscopy by Chevalier Jackson, and on bronchiectasis by J. B. Amberson. Recent views on the pathology of pulmonary tuberculosis are expressed in two papers, the first by J. A. Miller on the evolution of pulmonary tuberculosis, and the second by A. R. Rich on immunity in tuberculosis, the latter insists strongly on the absence of any real basis for the view that hypersensitivity (allergy) is necessary for development of immunity. In a paper on carcinoma of the lung Lloyd E. Craver discusses the brilliant results which have recently attended lobectomy and pneumonectomy in certain cases of this disease, but he is careful to call attention to the very small proportion of cases which are suitable for this form of treatment. In many cases the growth is inoperable when first discovered, either on account of its anatomical position or because of the early appearance of metastases. Of the remainder a considerable number are not fit subjects for major surgery either on account of age or general weakness. In Craver's experience internal or external irradiation is here mostly the treatment of necessity rather than of choice, although palliation of symptoms often occurs he is doubtful if life is prolonged by these measures.

NEW INVENTIONS

A NEW TYPE OF NEEDLE HOLDER

I DEvised this needle holder primarily for use in cleft palate operations in children, but it is equally useful in all operations, in any situation where space is limited and accurate suturing is essential. The majority of needle holders were too massive and cumbersome for the small needles employed. Apart



from this, when working in such a confined space one's hand invariably tended to obscure the view of the operation field. Owing to the pronounced "cast off" in the handles, the needle is always in view, and the slight curve in the jaws and the fineness of their points enable even the smallest sizes—e.g. Lane's—to be held securely in various positions. The sutures can thus be inserted from any angle which is impossible with the ordinary types of needle holders.

The needle holder has been made for me by Messrs. Down Bros., London, S.E.

G. L. PRESTON, F.R.C.S. Edin.
Honorary Surgeon to the Prince of Wales's
Hospital, Plymouth

THE LANCET

LONDON SATURDAY APRIL 24 1937

A MASTER OF EPIDEMIOLOGY

THE classics of epidemiology wear better perhaps than those of any other branch of medicine. The student of epidemic disease may still find immediate help and inspiration in the writings of FARR and BUDD MURCHISON and GRAVES, BRETONNEAU and TROUSSEAU or HIRSCH and CREIGHTON and the more his experience grows does he find them instructive. This is not because epidemiology is an unprogressive science, its advance has been as spectacular as that of any speciality. That good observation in the field of epidemic disease is not readily superseded depends partly on the fact that many epidemic diseases were more common and more easy to study in bulk in the past than now but partly also on the circumstance that it was the disease rather than the patient that was studied and the *argumenta ad hominem* which tend to make the doctor a good friend but a bad scientist were largely eliminated.

JOHN SNOW has hardly yet been accorded a place in the front rank of the masters of epidemiology but his famous treatise on cholera is a cameo of medical writing and a model of epidemiological inquiry. We welcome the cheap and elegant reprint of the work reviewed on another page which has been produced through the good offices of the Commonwealth Fund and makes available a story as interesting and instructive as any in medicine. Cholera as a serious epidemic disease had a brief and meteoric career in England. It reached the country somewhere about 1830 and in 1854 it fell on London like a wolf on the fold. Had it arrived half a century earlier it might have caused a major national disaster as it was the fold was being watched over by such alert shopkeepers as WILLIAM FARR, WILLIAM BUDD and JOHN SNOW. Within half a dozen years it was attacked and practically exterminated in this country and foremost in the event was JOHN SNOW. SNOW had studied cholera in Newcastle some ten years earlier he knew his enemy and he achieved its destruction in an astonishingly short time. Within a few weeks from the outbreak he was able to put on permanent and unmistakable record his thesis that cholera was a water borne disease, that the source of infection was the dejecta of cholera patients and that the *matrices morbi* was what we should now call a germ. SNOW was a fine example of the naturalist doctor characteristic of English medicine. He was in the best sense in the Hunterian tradition. A physician with a busy practice he yet could find time for intense observation and for scientific work of the highest quality. It is sometimes said that this is impossible under present-day conditions and research workers demand whole time facilities. It remains certain that such men as HUNTER or SNOW would have

succeeded in finding opportunity for their work in the face of practically any difficulties though admittedly these men lived dedicated lives and their successes were not won without material and social sacrifices.

SNOW was one of the pioneers of anaesthetics and he must have taken a large part in popularising the use of anaesthetics at childbirth for it was he who gave Queen VICTORIA her first anaesthetic and thus set the fashion. He does not seem to have benefited financially to any extent from this practice though all the fine ladies of the time must have demanded the Queen's anaesthetist and would surely have been willing to pay substantially for his services. We are told by his friend RICHARDSON however that his income never exceeded £1000 a year and this explains much. SNOW wrote some fifty papers on medical subjects many of them on anaesthetics but his masterpiece is the little treatise of some 140 pages in which he records his investigations of the London out-breaks of cholera of 1849-54. The story reaches its highest pitch of interest in the account of the epidemic perhaps the most severe in English experience which in 1854 caused over 500 deaths in ten days in the very heart of the West End—in the neighbourhood which now backs on the Regent Palace Hotel. The story is known to every student of epidemics—how SNOW gratuitously took upon himself the task of investigation how by ingenious and unremitting inquiry he traced case after case to the Broad-street Pump how the widow of a percussion cap maker retired in Hampstead sent a messenger daily for a bottle of water from the Pump as she preferred it to the local waters how she died, a unique case in her salubrious neighbourhood how her niece who visited her drank some of the treasured water, returned to her residence in a high and healthy part of Islington was attacked by cholera and died also how the men of Mr Huggins a Brewery hard by the Pump knew of a better pump and all escaped—such are some of the elements which makes SNOW's report of perennial scientific and human interest. The story has been retold by Dr H. H. SCOTT in his excellent book, *Some Notable Epidemics* but this should only whet our appetites for the original sources. The appearance of a cheap reprint of SNOW's classic will it is hoped gain many new admirers for this representative as RICHARDSON calls him of medical science and art of the Victorian era.

CIRCULATORY COLLAPSE

IN a recent issue when discussing the effect of extensive local injury we surveyed various theories of the cause of secondary shock. These theories assumed a loss of fluid with diminution in the volume of circulating blood and differed chiefly in their explanation of how this loss was brought about. It is generally taken for granted that a total blood volume which is small in relation to the capacity of the vascular system is sufficient to start the vicious circle seen in surgical shock but this disproportion between volume and capacity may

well be an accompaniment rather than a cause of the condition. Surgical shock may, for instance, be due to some profound dislocation of function in the central nervous system, of which vasomotor incoordination is merely one of the more serious manifestations. S. WEISS, R. W. WILKINS, and F. W. HAYNES of Boston² have done work of great interest in this connexion. By using sodium nitrite they are able to produce a state of circulatory collapse in which the condition of the subject closely resembles that seen in shock, but the state is reversible in a matter of seconds. The subject is placed in a horizontal position and given a dose of nitrite which has little or no effect so long as he remains lying down. After a few minutes he is raised into a vertical, or nearly vertical, position, with dramatic results. Yawning more and more often, he develops sighing respiration, restlessness, increased peristalsis, and warm and then cold perspiration in rapid succession. The skin becomes cyanosed and finally "ashen grey," the pupils become dilated, and the subject of the experiment becomes drowsy. Dimness of vision and extreme muscular weakness are followed by unconsciousness. This process takes about 20 minutes, but when the horizontal is resumed, consciousness is immediately recovered and the symptoms rapidly subside.

Quantitative observations show that the peripheral blood flow, as estimated with the plethysmograph in the hand, is diminished, the venous pressure is less, the pulse rate more rapid, and the pulse pressure is diminished at the expense of the systolic arterial pressure. Shortly before syncope the blood flow through the hand falls to zero, the venous pressure falls below the hydrostatic level of the right auricle, the radial pulse disappears, and the blood pressure is unobtainable. Then, just when syncope is about to ensue, the pulse-rate may suddenly fall from over 120 to less than 80 per second, elimination of this drop by means of atropine makes no difference to the other manifestations, and the investigators attribute it to stimulation by anoxæmia of the cardio-inhibitory centre of the medulla. Normal blood flow, venous pressure, pulse pressure, and pulse rate are promptly restored by the horizontal position. Further experiments lead to the conclusion that not the arterioles, but the veins and venules, through loss of tone and increased capacity, are responsible for the sequence of events. It is claimed that "pooling" of blood can occur in the systemic veins as well as in the splanchnic area, and is accompanied by reflex vaso-constriction on the arterial side.

The significant feature of these experiments is the "pooling" of blood in such a way that it can be quickly returned to the circulation, and the clear demonstration, by first "removing" and then restoring the blood, that interference with the circulation is alone responsible for the symptoms. There can be little doubt that, could the experiment have been pushed further, secondary effects due to anoxæmia of the nervous system would have supervened, while lack of circulation and vaso-constriction in the periphery might well have led

to a leakage of fluid through the anoxic capillary walls and a state of "irreversible" circulatory collapse.

PRINCIPLES OF MEDICAL STATISTICS

IN clinical medicine to day there is a growing demand for adequate proof of the efficacy of this or that form of treatment. Often proof can come only by means of a collection of records of clinical trials devised on such a scale and in such a form that statistically reliable conclusions can be drawn from them. However great may be our aversion to figures we cannot escape the conclusion that the solution of most of the problems of clinical or preventive medicine must ultimately depend on them. Even those who pretend to despise this method of approach find that any assessment of success or failure which is based on fact rather than on opinion must nearly always be expressed in some numerical form—e.g., when the medical observer reports that he has treated so many cases with a favourable result in such and such a proportion, or the public health worker assesses the attack-rate on a population inoculated against some infection. But often, unfortunately, the figures used are either insufficient in number or documentation or too limited in their scope to bear the weight of the interpretation that is placed upon them. An additional difficulty is that few medical men have been trained to interpret figures or to analyse and test their meaning by even an elementary statistical technique. We have reason to believe that there is now a steadily increasing demand among both clinical and public health workers for some knowledge of that technique and a realisation that it is not much good collecting figures more or less haphazardly and then to expect a professional statistician to draw conclusions from them.

Acting upon this belief last year we invited Mr A. BRADFORD HILL, D.Sc., of the London School of Hygiene and Tropical Medicine, to prepare for our columns a series of short simple articles on such methods as his experience of medical statistics had shown him would be most useful in that field. Dr HILL's first article appeared on Jan. 2nd, 1937, and his last will be found on p. 1001 of this issue. He has succeeded beyond our hopes in demonstrating some of the ways in which investigations can be planned and figures derived from them can be analysed in order to yield fruitful results. He has chosen examples from medical publications to illustrate both the types of problem with which the medical worker is faced and the kinds of error he is most liable to make, and wherever possible he has either avoided mathematical presentation of his material or has led up to it so skilfully as to rob equations and even square roots of their traditional horrors. This consideration for those who are not mathematically minded has resulted in an exceptionally clear exposition of a difficult subject and we have had many requests to which we are happy to accede, for the reissue of these articles in book form. They will appear shortly as Vol. 3 of THE LANCET post-graduate series under the title *Principles of Medical Statistics*.

² *J. clin. Invest.* 1937, 16: 73 and 85.

ANNOTATIONS

THE TREATMENT OF ASPHYXIA
NEONATORUM

THE gibe that it takes ten years to get a new idea into a medical text book and the rest of time to get it out is not without point when applied to certain methods of treatment still recommended in some places for the severe degrees of asphyxia neonatorum. The Schultze, the Byrd and the Silvester methods are now generally regarded as valueless for the purposes of initiating respiration in an apnoeic infant and are known to be potentially dangerous, for their use may inflict trauma and cause or aggravate shock. Mouth to mouth insufflation is also of doubtful value: it may on rare occasions save a life but at the best it is an uncertain method not devoid of risk. Unfortunately no very effective and simple alternative to these unsatisfactory methods has hitherto been suggested by their critics and many obstetricians have been content, after clearing the thick mucus from the pharynx to take no action beyond keeping the infant warm in the hope that the shock from which it suffers will subside and that the slow rise of carbon dioxide tension of its blood will in a short time evoke an inspiratory effort. More active intervention is advocated by Dr R. A. Wilson of New York who on April 16th presented to the section of obstetrics and gynaecology of the Royal Society of Medicine the results of ten years' investigation of the cause and treatment of asphyxia neonatorum. The most difficult case to treat he said is the infant which has made no effort to breathe. To give oxygen and carbon dioxide by a face mask is useless and even the Drinker respirator is of so little avail that an attempt to use it may waste valuable time. Attempts to distend the lung vessels by gas pressure are in Dr Wilson's view dangerous since experiment has shown that pressures up to 18 millimetres of mercury do not lead to adequate lung expansion although they may cause rupture of the alveoli. A method recommended as useful even if it does not immediately cause respiratory efforts is intubation of the trachea followed by insufflation of oxygen under low and preferably intermittent pressure. But Dr Wilson holds intravenous injection of respiratory stimulants to be the most effective of the various means of stimulating respiratory efforts. He said that alpha lobeline and Coramine are both active in this respect but lobeline is the safer drug and he showed cinematograph films and graphic records of the respiratory efforts of new born infants obtained by a specially designed spirometer to demonstrate the remarkable effect of lobeline in initiating respiration in apnoeic infants and in augmenting feeble respirations in newly born children whose respiratory centres had been depressed by morphine or by barbiturates previously given to the mother. In barbiturate poisoning lobeline seems to be much more effective than carbon dioxide. Dr Wilson said that alpha lobeline could safely be given to infants apparently stillborn in a dosage of gr 120. The fetal cord should be clamped 8 or 9 inches from the body and the lobeline solution injected through a hypodermic needle into the umbilical vein a few inches from the clamped end. The cord should then be stripped with the fingers in order to milk the fluid into the circulating blood. The distal half of the cord should be emptied quickly and then reclamped; the remainder should be stripped at a slower rate in accordance with the

infant's needs and the response evoked. It usually took 15 seconds for the drug to reach the respiratory centre. The first effect was invariably the production of a generalized spasm of the body of the infant often with opisthotonos. This spasm was followed by vigorous respiratory efforts until these started the treatment should be conducted with the child held in the head down position.

Intravenous lobeline while of the greatest value should not be the only remedy tried. It is the result of the experiences gained by Dr Wilson and his colleagues in the treatment of 340 cases of asphyxia neonatorum the following technique has been evolved: (1) The infant's mouth and pharynx are immediately aspirated with a mucus catheter in order to remove the thick secretion and liquor which often obstructs the airway. (2) The cord is clamped, the vein injected with lobeline, the cord half stripped and clamped again according to the method described above. (3) In severe cases a tube is passed into the trachea by aid of a special laryngoscope and the air passages are then insufflated with a mixture of oxygen (80 per cent) and carbon dioxide (20 per cent). The pressure of the gas should not exceed 5 mm. of mercury. (4) The remainder of the cord is now slowly stripped the child being held head downwards. (5) After initiation of respiration and usually within two minutes time the tracheal tube is removed and replaced by a face mask through which the oxygen carbon dioxide mixture can be continued according to the needs of the case. Since prolonged apnoea may damage the respiratory centre treatment should be instituted with the minimum of delay.

These recommendations command respect because of the close study Dr Wilson has given to the experimental and clinical problems of asphyxia and because of the exact nature of his own clinical observations. The methods suggested are not new but the clear definition of their scope and value which is the outcome of wide experience has served to remove many vague impressions. The way in which lobeline is used is worthy of special note and will doubtless be tried by obstetricians in this country.

PRURITUS ANI

THE subject of pruritus ani is one of perennial interest and of no little importance both from the sufferer's point of view and also that of the medical attendant who is asked to undertake the treatment thereof. It is now well recognised that a large proportion of cases of anal pruritus are caused by a discharge at the anus. Many local conditions in the anal canal or rectum may set up such a discharge—for example anal fissures or fistulae, prolapsing hemorrhoids or polypii and any form of proctitis or colitis. The discharge dries up on removal or cure of these causative conditions and the anal irritation which is usually of a fairly mild type soon disappears too. Severe idiopathic or essential pruritus ani which was the subject of observations by J. W. Riddoch in our last issue is to be regarded as a separate disease. In Riddoch's view idiopathic pruritus ani is caused by oedema of the perianal skin following on stasis in the external hemorrhoidal veins. In a histological study of six cases evidence of oedema was found such as swelling of the prickly cells, poor staining of the nuclei and unusual prominence of the intercellular channels. In the cutis there was also obvious oedema and this was not attributed to any sort of irritant because of the absence of lymphocytosis.

infiltration The sensation of irritation is known to arise in the epidermis, and is a feature of urticaria and other skin conditions in which oedema commonly occurs. Oedema often arises from local venous stasis, and Riddoch produces clinical evidence of the way in which stasis and congestion of the veins in the external hæmorrhoidal plexus may be related to anal pruritus, he states that where this is present dilated anal veins are often to be seen through a proctoscope in the lower part of the anal canal. Riddoch suggests that certain types of treatment have proved beneficial because they have destroyed or sclerosed the veins in the anal region. Thus Ball's operation may act in this way as much as by section of sensory nerves, and the injection of various solutions, such as alcohol or hydrochloric acid, may act similarly, possibly too the injection of anæsthetic solutions in vegetable oils may have some effect, apart from the immediate anæsthesia, by causing fibrosis and venous obliteration. According to Riddoch's theory the beneficial effects which in some cases are obtained by X-ray treatment may be due to a destructive action on the blood vessels. Many observers have commented on the improvement in pruritic cases which often occurs after a *submucous* injection of a sclerosing solution such as phenol in oil, and this may be due to fibrosis of veins in the internal hæmorrhoidal plexus, and closure of the communicating veins through which back pressure can take place on the anal veins. When slight degrees of oedema (the pre-pruritic state) are present, many factors such as allergy, slight rises in temperature, or alcohol may act on the skin vessels and produce irritation, whereas the normal skin would not be affected.

Riddoch's views at least provide a useful basis for examination and treatment of the idiopathic type of pruritus, and also offer a reasonable explanation why so many different forms of treatment have, at various times, been acclaimed as beneficial in this condition. A patient with anal pruritus should certainly be subjected to the careful routine of a complete rectal examination—inspection, palpation, proctoscopy, and sigmoidoscopy. The best method of circumventing anal venous stasis must be a matter of consideration in each individual case. The treatment of the internal hæmorrhoidal areas by sclerosing injections is likely to assume a greater importance in cases of pruritus, and for the veins of the external hæmorrhoidal plexus doubtless much may be done by way of operation (excision of skin ridges or tags with the underlying veins) or by injection of irritant solutions which have been proposed from time to time. These include alcohol, quinine urea, hydrochloric acid, castor oil, phenol in oil, and the various anæsthetic solutions in oil, most of which, it may be noted, contain benzyl alcohol.

HOSPITAL KITCHENS

THE importance of providing good, appetising, well served food for hospital patients was emphasised by Miss R. Whitaker, principal of the Gloucestershire Training College of Domestic Science in a Chadwick lecture delivered in London on April 15th. Failure in the dietary department, she said, "delays convalescence and unfavourably moderates its completeness." The provision of suitable food is, however, by no means simple. Good food, well cooked, may suffer deterioration in its transport from the kitchen to the bedside, and many cooks in institutions are unfairly hampered by lack of the conditions in which alone a satisfactory diet can be produced. Miss Whitaker laid special stress on the necessity of well-

planned kitchen offices, so that raw materials may enter the building as near as possible to the stores, and each item forming part of the meal may "travel steadily forward through the various processes of preparation, with no backward movements and as little cross tracking of workers as may be, until the finished product is assembled in the hot or cold closets of the servery." Not only must the large apparatus be properly placed, but the small tools should also be as far as possible within reach of the worker, who should be able to sit at her duties by the provision of knee hole accommodation in her table. Ventilation and lighting are important. Cross-ventilation is essential, and alternative methods should be available. The best lighting of a kitchen, Miss Whitaker said, is literally the cheapest. Natural light should be admitted to the greatest possible extent, while artificial light should be adequate, without glare, and placed to fall upon the work and not upon the worker. A combination of gas and electricity, with the addition of steam, will probably give the greatest efficiency in fuel.

STAPHYLOCOCCI AND URINARY CALCULI

THE ætiology of urinary calculi is still an unsolved problem. The part played by infection is however well recognised and some modern authorities indeed are even doubtful whether urinary lithiasis exists at all unaccompanied by infection. H. P. Winsbury White, who has recently reviewed the subject, points out that this conclusion has been reached chiefly as the result of improved technique, whereby organisms may be found more readily in the urine and actually identified in the nuclei of the calculi themselves. These investigations have particularly incriminated the staphylococcus. J. Swift Jørgensen repeatedly emphasises the importance of staphylococcal infection of the urine, and recently John Hellström³ has written a monograph on the subject of staphylococcus stones. This study is based on 90 cases, all observed personally by himself, thoroughly investigated, and followed up for varying periods, 16 of them for more than ten years. Only cases in which staphylococci were found in the stone without a large admixture of other organisms are included in the series. The stones were examined for cocci by dissolving out the inorganic constituents with hydrochloric acid, and then either making smears or cutting sections. Cultures from the urine showed that by far the commonest organism was the *Staphylococcus albus*. It is estimated that about 14 per cent. of all urinary calculi are due to staphylococcal infection.

The treatment of these conditions is unsatisfactory because the infection is so difficult to eradicate. The stones themselves have mostly to be removed by operation, either by themselves or with a kidney. Hellström's operative mortality was less than 1 per cent, but his recurrence rate was 38 per cent. The percentage cured of both stones and infection was 52. Seventeen out of the 90 patients avoided operative treatment by passing their stones, of these only 1 suffered a recurrence, but 8 remained infected. It is apparently even more difficult to treat the infection than the stone. Acidification of the urine, vaccination, and most of the so-called "urinary antiseptics" are ineffective. Hellström obtained the best results with neosalvarsan and also favours direct irrigation of the renal pelvis.

¹ Brit. J. Urol. 1935, 7, 103.
² Stone and Calculous Disease of Urinary Organs, London, 1934.
³ Acta chir. scand. 1924, 79, Suppl. 6.

The actual method of formation of staphylococcus stones is not thoroughly understood. Many of the factors concerned in stone formation in general are probably at work, such as disturbances of the colloid-crystalloid equilibrium of the urine. It is possible that conglomerations of the cocci serve as nuclei for the stones to form around, or the cocci may act indirectly by providing a kind of protein that upsets the colloid-crystalloid equilibrium. The large masses of cocci found in some of the stones tends to support the former hypothesis. Another factor may be the effect of staphylococci on the pH of the urine, for many staphylococci (especially *S. albus*) have the power of forming ammonium carbonate from urea. M. S. S. Earlam⁴ and others have shown that by no means all staphylococci associated with urinary calculi have the power of splitting urea and moreover most patients with staphylococcus stones have acid urine. Hellström observes however that in all cases examined by him the staphylococci on cultivation in urine turned it strongly alkaline and suggests that an artificial solution of urea is not a fair substitute for the urine itself. He maintains also that he has often observed a difference between the reaction of the bladder urine and that of the urine in the immediate vicinity of a renal calculus.

NATALITY AND MORTALITY IN THE U.S.A.

Two volumes corresponding to the annual reports of the Registrar General of England and Wales are issued annually by the Bureau of the Census of the United States. One deals with the year's births still births and infant mortality the other with the statistics of the mortality registered. The reports for the year 1934 have recently been issued.⁵ The registration area first established for deaths in 1880 for births in 1915 has slowly but steadily widened. For mortality statistics States have been admitted only on the basis of approximately complete registration of deaths (at least 90 per cent of all deaths) and when the data have shown that the deaths are recorded properly under adequate registration laws. Texas admitted in 1933 has been the last State to satisfy these criteria. The present reports therefore relate for the first time to the whole of the United States. Supplementary returns are also provided for the territory of Hawaii Puerto Rico and the Virgin Islands. In 1934 the estimated population of the United States was 126 626 000 and the total numbers of births and deaths registered amounted to 2 187 638 and 1 396 903 giving a birth rate of 17.1 per 1000 inhabitants and a crude death rate of 11.0. The natural increase of population it will be noted was rather more than three quarters of a million persons. The infant mortality rate was 60 per 1000 live births and in addition 78 503 stillbirths (7.6 per 100 live births) were notified. This enormous mass of material is tabulated in these two reports in considerable detail attention being paid to such factors as urbanisation season colour or race sex and age and cause of death. Statistics are given of plural births (there were in 1934 six cases of quadruplets all born alive) and of birth rates by age of mother information we are still waiting for in this country. In view of the public interest in road accidents two special accident tables are included in the mortality report. In 1934 just over 36 000

deaths were attributed to motor vehicle accidents in the registration area an increase of over 5000 deaths above the average for the three previous years. For those desirous of making an excursion into the vital statistics of the United States study of these two reports is essential.

SURGICAL TREATMENT OF HYPERTENSIA

Page and Heuer¹ describe a small series of cases—17 in all—treated for hypertension by bilateral division of some or all of the anterior nerve roots dorsal VI to lumbar II. The grounds for this procedure are that it cuts off vasoconstrictor impulses to the splanchnic area and this is followed by vasodilatation in this area with a resulting fall of blood pressure. That this is the immediate effect of the operation seems clear. But in most of these few cases at any rate the drop in blood pressure appears to have been merely temporary and at the end of the period of observation (maximum 37 months) it was seldom much lower than before the operation. The chief improvement observed was in the subjective symptoms and as the authors say that a strong element of neurosis was obvious in many of the patients it seems likely that equal improvement might have been attained by less spectacular means. The operation in itself seems to have had no ill effect upon the functions of the heart or kidneys but it does not appear from this series of cases that any improvement in renal function is to be expected as a result of the lowering of blood pressure. This is in direct contradiction to results reported by Freyberg and Peet² in 48 cases of hypertension treated by bilateral section of the splanchnic nerves. In such patients as responded by a considerable fall of blood pressure these workers found decided improvement in the renal function as measured by the concentration and urea-clearance tests. But in this series again the results of the operation were very variable and as a rule the blood pressure level after an initial fall showed a tendency to rise to or even above the pre-operative figure. Such results indeed raise serious doubts whether severe operations upon the nervous system are a justifiable means of treating hypertension.

CHRONIC MILIARY TUBERCULOSIS IN CHILDREN

As long ago as 1845 Waller in Germany noted that miliary tuberculosis of the lung is not always fatal and radiography has now made it recognizable before death. Dr R. H. Fish³ is thus able to describe four cases with recovery (as well as six fatal ones) observed at High Wood Hospital Brentwood which receives all children with pulmonary tuberculosis requiring treatment under the London County Council tuberculosis scheme. In the fatal cases the illness varied in duration from 51 to 11 months from its demonstration radioscopically. Four of the six showed undoubted though temporary improvement and post mortem examination of the tubercles which contained live tubercle bacilli revealed all stages of healing. The four non fatal cases were similar to the others except in their recovery. Persistent but mild pyrexia was almost constant but it was punctuated by occasional rises perhaps representing waves of bacillæmia arising from massive tuberculous glands in the upper mediastinum. A slight cough was often present.

⁴ *Brit. J. Urol.* 1936 2 23.

⁵ U.S. Dept. of Commerce, Bureau of the Census, Mortality Statistics 1934, Thirty-fifth Annual Report, pp. 39-224. Birth, Stillbirth, and Infant Mortality, Statistical Year 1934, Twentieth Annual Report, pp. 111-125. U.S. Government Printing Office, Washington 1936.

¹ Page J. H. and Heuer C. M. *Arch. Intern. Med.* 1936 101 p. 214.

² Freyberg R. H. and Peet J. M. *J. Clin. Invest.* January 1937 p. 65.

³ *Arch. Dis. Child.* February 1937 p. 1.

and sometimes a few râles, but no gross signs were found in the chest. Tubercle bacilli were occasionally demonstrated in the sputum, but recourse to gastric lavage and guinea pig inoculation was commonly necessary. The Mantoux reaction was usually positive on using 0.1 c.c. of 1 in 10,000 old tuberculin and always in 1 in 1000 dilution. Radiography showed the characteristically diffuse and mottled appearance of the lung. In the four non-fatal cases, and some of the fatal ones, extrapulmonary lesions were coexistent.

In treatment, rest is of paramount importance, and it must be continued until the stippling has disappeared, which happens when the tubercle is replaced by fibrous tissue. All these patients were treated on open air balconies, and Dr Fish gave them gold in the form of Solganal B, which he thought beneficial. The prognosis proved as difficult in this type of tuberculosis as in others, and cases apparently of the worst type recovered.

RATIONAL SALINE THERAPY

THE intravenous injection of common salt solution has been recommended for a variety of conditions. Some of the recommendations appear contradictory—for example, the use of "normal" or hypertonic saline for cure of the anhydremia of shock and hæmorrhage and as a treatment for anuria in which fluid retention may be taking place. The occasional efficacy of intravenous therapy can be explained by blood analyses. Root¹ describes two cases in which intravenous hypertonic saline restored the urinary flow in patients with only one kidney. Both patients had anuria with increasing nitrogen retention and low blood chlorides, one as a result of vomiting and the other from excessive sweating. After intravenous therapy and restoration of the urinary flow the blood chemistry became normal and recovery followed. An example is given of the calculation of the chloride deficit and the exact amount of salt solution to remedy this. No doubt if these methodical analyses could be conducted on all patients before the administration of intravenous solutions, such brilliant results might be achieved more often. There seems to be no very good reason why a vein should be preferred to the alimentary canal for salt or fluid replacement, especially if reasonably early blood analyses are done to reveal the condition before it becomes acute. If clinician and laboratory were always able to work more closely together in these circumstances many lives would be saved.

THE BLOOD PICTURE AFTER INDUCED FEVER

THE account on p. 1007 of the congress on artificially induced fever shows to how many different uses this treatment is now being put in America. Its effect on the hæmopoietic equilibrium is thus of considerable moment. F. H. Krusen has recently summarised² his observations on a large group of patients. The patient's body was exposed from 3-7 hours in hot circulating humid air varying from 145°-150° F., the humidity being kept constant. Samples of blood were taken from each patient immediately before and immediately after each fever treatment. The disease for which fever therapy was given appeared to be without effect on the character of the response. Similar changes were noted in both venous and capillary blood, so it may be concluded that such changes represent a fundamental alteration in hæmo-

poietic equilibrium and are not dependent upon superficial hyperæmia. Average venous counts on 100 patients before treatment gave a leucocyte count of 7100 per c.mm., while after fever the count was 11,300 per c.mm. This increase was dependent upon an increase in polymorph cells. No change that was significant was found in the Arneth count. The red cell count was unaltered. The author believes therefore, that there is a true increase in circulating white cells, since there is no evidence of concentration of the blood and the white cell increase appears to affect one cell type only. Rather more elaborate studies of the same problem have been made by Dr M. M. Hargraves, who adds a note to Dr Krusen's paper. Dr Hargraves followed his patient for 20 hours after the onset of fever with half hourly blood counts. He found a response so constant that he characterises it as a "febrile hæmogram." There is a post-febrile leucocytosis, the duration and extent of which is an individual affair related to the duration and height of the fever. The peak of leucocytosis is dependent on a polymorphonuclear increase and often goes as high as or higher than 40,000 leucocytes per c.mm. At this stage the younger cells as shown by an Arneth count are increased, evidence it is believed of bone marrow delivery rather than of redistribution. As the polymorph peak declines, the total count is sustained, at least to some extent, by an influx of monocytes. The lymphocytes reappear in normal numbers only towards the end of the period. These figures, Hargraves suggests, confirm Krusen's observation which was correct for the time of sampling but usually missed the peak of the response. Apart from their own interest these figures emphasise again how rapidly changes in the white cell count occur, rendering single of far less value than serial observations.

OBSTETRICAL EMERGENCIES

Prof Farquhar Murray's idea of a local emergency service for difficult childbirth is now bearing fruit. It is some twelve years since he began to work out a way of providing the accoucheur with the needed assistance whenever the unexpected difficulty presented itself. In 1929 he advocated¹ the organisation of emergency services, especially in industrial areas, and in 1935, with the co-operation of the medical officer of health, he initiated such a service in Newcastle upon Tyne, which was nearly the first of its kind, something similar having been tried in Lanarkshire two years previously. In that year a local Newcastle journal gave a graphic account of how the efficiency of the service was tested. Prof Murray with an accoucheur and the M.O.H. sent an emergency call from a house in a Newcastle suburb, and within 15 minutes of the call being made a nurse was on the doorstep, followed in another minute by the gynæcologist, who had travelled three miles and was only summoned after the first man at the rota was found not to be at home. The procedure is simply this: the doctor or someone acting for him telephones to the maternity hospital where the outfit is kept, asking for the service to be put in motion, and giving name and address of patient and name of consultant desired. The hospital rings up the consultant named and if he is not at once available one of the others on the panel of four takes his place. He goes direct to the patient's house unless this is outside the five mile radius, in which case he calls to pick up the nurse and outfit. For local cases the hospital telephones to a taxi rank and sends the

¹ Root H. F. *J. Amer. med. Ass.* March 20th 1937 p. 947.
² *Amer. J. med. Sci.* 1937 193, 470.

¹ *Brit. med. J.* 1929 1 601.

nurse and outfit direct to the patient's house. The agreed charges for Newcastle-upon-Tyne are consulting fee two guineas, operation fee four guineas, nurse and outfit one guinea, taxi charges extra. Outside Newcastle the service is now available in Gosforth, Newburn, Tynemouth, West Hartlepool, and generally throughout the counties of Northumberland and Durham. During the eighteen months it has been in operation some 20 emergency cases have been attended, in a number of which Prof. Murray is assured that lives have been saved.

Just over a year ago a similar flying squad was inaugurated at the Birmingham Maternity Hospital by co-operation between its honorary staff and the medical officer of health, the underlying principle of the scheme being to bring the resources of the hospital to the patient's bedside in case of serious obstetrical complications where transport would be likely to impair the chance of recovery. The equipment is supplied by the public health authority and the scheme in general is planned on the northern model. The working has been found quite simple. The practitioner in charge of the case sends two messages—one to the consultant, the other to the maternity hospital which is in close touch with the St. John Ambulance Service. Within a few minutes a senior nurse arrives with equipment which includes blankets, hot bottles, bags containing surgical requirements and drugs appropriate for any emergency. The ambulance stays at the door in case the patient should be in a fit condition to be moved but in practice it generally does no more than take the apparatus and nurse back to hospital. During the short period in which it has been in use the flying squad has admittedly been instrumental in providing help without which the parturient mother could not have come through safely.

THE JOURNAL OF THE UNIVERSITY OF MANCHESTER

The first issue of the *Journal of the University of Manchester* represents a venture which must be successful. The journal will be recognised by all the members of the university as forming a common bond between the graduates providing them with topical news and interesting personalities as well as information on developments in university policy. If future issues maintain the standard of No. 1 Vol. I the journal will be welcomed not only by those whom it is specially designed to please but by all interested in university education. The recent growth of the University of Manchester and the part to be played in the future by university education are set out in two opening essays by Sir Ernest Simon, treasurer of the university, and Prof. Godfrey Thomson, whose Ludwig Mond lecture delivered last autumn at Manchester is now reproduced. Prof. Thomson closes with these words which all who take heed to the meaning and needs of education will endorse—

The only hope for unity permanent unity among mankind is through the rule of intelligence through the cultivation by an education proper to each of the intelligence of all. The schoolmaster is right who considers that his sole business is to lead his pupils to see truth clearly and who holds that that is in itself character training and the only character training the school may lend itself to if it is to refrain from sowing party or class colour or race or prejudice of whatever kind but is to serve civilisation and all mankind.

The university is the next stage to the school, and this broad social view is even more obvious in university training. The new journal exhibits the

University of Manchester as a centre of liberal progress and its graduates will welcome it and it is a present to them for it will be supplied without charge to them and the friends of the university on application to the Manchester University Press, Wright-street, Manchester.

LYMPHATOLOGY*

A SYSTEMATIC study has been pursued for many years at the anatomical institute of the University of Kyoto into properties of lymph and the lymphatic system for which subject they use the convenient term lymphatology. Recent results are recorded in a series of papers numbered 76-101 by a group of workers under the general direction of Prof. S. Funakoka. The rabbit has been the experimental animal throughout and lymph was obtained from afferent and efferent trunks of the popliteal gland from the gland capsule itself and from lymphatics of liver and intestine by simple collection or perfusion. In order to collect lymph at these sources special techniques have been developed. Many of the workers have exploited the method devised by Prof. M. Watanabe under the guidance of Funakoka by means of which all lymphoid tissue is removed from popliteal glands and lymph is collected in the shell of the capsule that remains behind. Lymph obtained by this means is referred to as

Brunnelymph to distinguish it from that obtained from afferent and efferent trunks. An improved method for gaining access to the efferent popliteal lymphatic has been devised by Y. Yoshida. It consists in constricting the efferent vessel together with the nutrient artery by means of a ligature till it is distended with stagnant lymph. Then when it is easily visible a large sized hypodermic needle is passed into its lumen, a second ligature is passed round the needle and the first is removed. This manoeuvre diminishes damage to blood-vessels in the gland and the danger of contamination of lymph by cells and serum. A method for obtaining liver lymph is described by Funakoka and S. Sumiya. Various quantities of the lymph which was obtained are given in a Table but unfortunately no mention is made of the time taken to collect these amounts. In this respect the contribution by K. Okamoto is especially interesting for he gives the following details: the duration of obtaining peripheral lymph depends upon the time of year. It is more difficult in April and at the end of October (in Japan) by the Brunnelymph method the quantity collected in the first half hour varies from 0.3-1.5 c.c. and the mean is 1.2 c.c. per hour. The limb from which the flow was obtained was normal, was not massaged, and the animal was loosely held round the abdomen. Details such as these are conspicuously lacking in the form in which most of this Japanese work is available to European and American readers and they are of far greater interest than tabulated results of scantily described

used in an examination of normal and retrograde lymph flow

Part II ends with a concise summary by Prof Funaoka of chemical investigations done at his institute as well as elsewhere and his promise to develop certain special themes in future volumes

THE TAVISTOCK CLINIC'S APPEAL

THOSE who were associated with the institute of medical psychology now situated at Malet-place, WC1, in its early days at Tavistock square, will rejoice that the old name is to be restored. This welcome change comes, however, at a time of severe crisis for the clinic. It is one of the very few institutions which gives psychotherapy to out-patients suffering from neuroses and psychoneuroses, and provides post graduates with opportunity to study the various methods employed by its staff. It promotes many courses of lectures and demonstrations on mental health for medical and lay workers and also maintains a child guidance clinic. All this work is supported entirely by voluntary generosity, the medical staff are either unpaid or receive very small honorariums.

The council of this excellent clinic are now faced with serious shortage of money. A year ago they hoped almost immediately to build and equip a hostel for in patients in the neighbourhood, but they received so little financial support that they did not feel justified in carrying out the plan. The lease of the present hostel was due to expire in a few months but it has fortunately been possible to arrange for an extension until midsummer next year. This is, however, only a respite and financial help is none the less urgently needed. The council say in their annual report for 1936 that unless the situation is promptly relieved they will be forced to curtail the clinic's work and to abandon its promising extension. It would be tragic if the development of the work of this clinic were thus hindered. In many other countries the problem of the mentally unfit is dealt with on a much larger scale, for example, Vienna has a dozen counterparts of the Tavistock Clinic. It would be a veritable disgrace if this pioneer clinic, which is even now quite inadequate in quantity though not in quality to meet the needs of London alone, failed to find support. It is doing fine work and has large numbers of patients clamouring for help. The council are making a special appeal to the industrial community, and especially to large employers of labour. There is every reason why they should get a response, since one third of the incapacity of employed persons in this country is attributed to functional nervous disorder, and in addition, thousands of workers who are not actually incapacitated have their efficiency much reduced by neuroses, with an aggregate loss to the nation's industry, which is not easy to measure but is certainly severe.

ETHYL STRYCHNINE AS A RESPIRATORY STIMULANT

THE important uses to which a drug might be put which had the power to exert a stimulating action directly on the medulla need no demonstration. Respiratory arrest during anaesthesia may be mentioned merely as one example. Experiments which their authors believe establish the value of ethyl strychnine as such a drug have now been described by M. Aiazzi Mancini and L. Donatelli.¹ They point out the striking difference between the

effects of strychnine and those of ethyl strychnine. The former, which was at one time much recommended for injection during surgical emergencies associated with shock, has long been disapproved of in these circumstances, the researches of Crile having had much to do with forming the conclusion that strychnine in spite of its stimulant power is exhausting and dangerous when applied to an acutely depressed nervous system. The most commonly employed restoratives for failure of breathing are at the moment carbon dioxide, with or without oxygen, Coramine, and lobeline. The authors to whom we have referred believe that ethyl strychnine may prove superior to these clinically as it has in their experimental work. Previous observers working with strychnine have maintained that respiratory depth is increased by injection of the drug only if the stage of convulsion is reached. Ethyl strychnine, on the other hand, is able to stimulate the medullary centre in doses which do not modify spinal activity. Moreover its toxicity to a normal animal is only a twentieth of that of strychnine. In animals under narcotics and anaesthetics ethyl strychnine was found to increase greatly the depth of breathing, without having much effect on the rate. In doses of 0.05 to 0.25 mg per kg of body weight the action is prolonged and unaccompanied by any convulsive effect. Undesirable symptoms were produced only if the drug was injected into a vein. The authors insist therefore that ethyl strychnine should be used intramuscularly, or under the skin. The doses needed to stimulate animals poisoned by narcotic or anaesthetic were of course much greater than those which stimulated respiration in the normal animal.

MEDICINE STAMP DUTY

In the Budget the Chancellor of the Exchequer has found the extra money he needed without action on the recommendations of the Select Committee on Medicine Stamp Duties, which showed him how to add £3,000,000 or thereabouts to the revenue. Till for the time being the report is shelved, but it is not likely to be forgotten. "I am having the recommendations examined," said Mr Chamberlain, "but in view of the very complex issues involved and the existing strain on the time of Parliament I am not proposing to introduce legislation on this subject in the Finance Bill this year." Such a source of revenue as exposed by the committee cannot be overlooked indefinitely, but, in the meantime, other means of keeping the traffic in proprietary medicines within reasonable bounds may be explored.

WE regret to announce the death on April 18th of Dr Archibald Donald, emeritus professor of obstetrics and gynaecology in the University of Manchester.

MEDICAL SERVICES IN U.S.S.R.—7528 million roubles (nominally about £200 millions) is allocated for the State budget of the Soviet Union for health protection in 1937, as against 5803 million roubles in 1936. It includes an expenditure of 1000 million roubles on building. The number of hospital beds in 1937 will be brought up to 619,800 as against 564,000 in 1936, maternity beds to 11,078 as against 6000. The public nurseries will be extended in the urban areas to provide places for 609,000 children as against 464,000 in the previous year, and rural areas to provide places for 570,000 children against 378,000. Sanatoriums and health resorts in 1937 will provide 95,000 beds as against 91,500 in 1936, while the number of beds at the rest homes run by the trade unions will be increased from 90,300 to 105,000.

¹ J. Pharmacol. March 1937 p. 304.

PRINCIPLES OF MEDICAL STATISTICS

XVII.—CALCULATION OF THE CORRELATION COEFFICIENT

THE correlation coefficient r is most easily calculated from the formula $r = \frac{\text{mean of the values of } (x - \bar{x}) \text{ minus mean of the observations of } y}{\text{standard deviation of } x \times \text{standard deviation of } y}$ Or in the symbols previously used,

$$r_{xy} = \frac{\text{Sum of values of } (x - \bar{x})(y - \bar{y})}{n\sigma_x\sigma_y}$$

The Ungrouped Series

Suppose for instance we have measured on twelve persons their pulse rate and their stature and wish to measure the degree of relationship if any between the two by means of the correlation coefficient. The twelve observations are given in columns (2) and (3) of Table X A.

TABLE X A

Indi- vidual No	Pulse rate in beats per minute	Height in inches	x^2	y^2	$x - \text{Mean } x$	$y - \text{Mean } y$	$(x) \times (y)$	$\frac{x \times y}{n}$ (1) $\times$ (3)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	63	65	3,844	4,225	-10	+1	+10	1.16
2	74	65	5,476	4,225	+2	+1	+2	1.810
3	80	73	6,400	5,329	+8	+4	+32	5.810
4	59	70	3,481	4,900	-13	+1	-13	4.150
5	65	69	4,225	4,761	-7	0	0	1.485
6	73	66	5,329	4,356	+1	-3	-3	4.818
7	78	69	6,084	4,761	+6	0	0	5.382
8	80	71	6,400	5,041	+14	+1	+14	6.000
9	61	74	3,721	5,476	-6	+3	-18	4.668
10	68	71	4,624	5,041	-4	+2	-8	4.878
11	75	68	5,625	4,624	+3	-1	-3	6.100
12	86	67	7,400	4,489	+13	-2	-26	5.360
Total 12	864	828	62,980	57,194	0	0	-10	59.597
Mean values	72	69	5,183.33	4,766.17	—	—	-1.58	4.966 12

The standard deviations can be found as shown before by squaring each observation finding the mean of these squares subtracting from it the square of the mean and taking the square root of the resulting figure. The standard deviation of the pulse rates is therefore $\sqrt{5248.33 - (72)^2} = 8.02$

and of the height is $\sqrt{4766.17 - (69)^2} = 2.27$. The deviation of each individual's pulse rate from the mean pulse rate of the twelve persons is given in column (6) and of each height from the mean height in column (7). If there is any substantial (and direct) correlation between the two measurements then a person with a pulse rate below the mean pulse rate ought to have a stature below the mean height one with a pulse-rate above the mean rate ought to have a stature above the mean height. (If the association is inverse positive signs in one will be associated with negative signs in the other.) Inspection of the figures suggests very little correlation between the characteristics. For the numerator of the correlation coefficient formula we need the product of the two deviations shown by each person. These are given in column (8). Their sum is -10

and their mean is therefore $-10/12 = -1.58$. The coefficient is reached by dividing this mean product value by the product of the two standard deviations—namely 8.02×2.27 and gives a value of -0.09 . In other words in these twelve individuals the pulse rate and stature are not related to one another.

In the example taken this is a satisfactory mode of calculation because the mean pulse rate and the mean height are whole numbers and also the original measurements are whole numbers. It is then easy to calculate the deviation of each observation from its mean. But if decimals had been involved the deviations would have been troublesome to calculate. In that case it is easier to avoid altogether using deviations and to multiply directly the pulse rate of each person by his stature as in column (8) applying a correction at the end to the resulting mean value. The correction necessary is this from the mean value of the products thus found we must subtract the product of the two means—i.e. the product of the distances between the points from which we chose to measure the deviations and the points from which we ought to have measured them. In the example taken this gives $4060.42 - 72 \times 69 = -1.58$ or the same value as was previously reached by working with the real deviations from the means.

This is the simplest and best method of calculating the two standard deviations and the correlation coefficient between the characteristics in anything up to 50-60 observations. With a larger series of observations finding the individual squares and products becomes progressively more laborious and it is better to construct a grouped correlation table.

The Grouped Series

As an example we may take for each of a number of large towns in England and Wales (1) a measure of the amount of overcrowding present in a given year and (2) the infant mortality rate in the same year. We wish to see whether in towns with much overcrowding the infant mortality rate tends to be higher than in towns with less overcrowding. We must first construct a table which shows not only how many towns there were with different degrees of overcrowding but also their associated infant mortality rates.

Table X B gives this information. The town with least overcrowding had only 1.5 per cent of its population living more than 2 persons to a room (this being used as the criterion of overcrowding); the percentage for the town with most overcrowding was 17.5. The lowest infant mortality rate was 37 deaths under 1 per 1000 live births and the highest was 110. Reasonably narrow groups have been adopted to include those maxima and minima and each town is placed in the appropriate cell. —e.g. there were 5 towns in which the overcrowding index lay between 1.5 and 4.0 and in which the infant mortality rates were between 36 and 40 there were 2 in which the overcrowding index lay between 10.5 and 13.5 and in which the infant mortality rates were between 86 and 90. (If a very large number of observations is involved it is best to make a separate card for each town person or whatever may have been measured, putting the observed measurements on the card always in the same order. The cards are first sorted into their proper groups for one characteristic (overcrowding) and then each of those packs of different (overcrowding) level is sorted into groups for the other characteristic (infant mortality). The cards in each small pack then relate to a particular cell of the table.)

Table X B shows at once that there is some association between overcrowding and the infant mortality-rate, for towns with the least overcrowding tend, on the average, to show relatively low mortality rates, while towns with much overcrowding tend to show high mortality rates. The table is, in fact, a form of scatter diagram.

TABLE X B
Overcrowding and Infant Mortality Example of Correlation Table

Infant mortality rate	Percentage of population in private families living more than two persons per room						Total
	1 5-	4 5-	7 5-	10 5-	13 5-	16 5-19 5	
36-	5						5
40-	9	1					10
50-	10	4					16
66-	4	7	1			1	18
76-	2	5	4	2	1		13
86-		2	2	2		1	7
96-		1	2	2	1	1	7
106-116		1		1			2
Total	30	21	14	8	2	3	78

To calculate the coefficient of correlation we need (1) the mean and standard deviation of the overcrowding index, (2) similar figures for the infant mortality rate, and (3) for each town the product of its two deviations from the means—i.e. (overcrowding index in town A minus mean overcrowding index) $\times$ (infant mortality rate in town A minus mean infant mortality rate). In other words we wish to see whether a town that is abnormal (far removed from the average) in its level of overcrowding is also abnormal in the level of its infant mortality rate. In calculating the means and standard deviations of the two distributions we can entirely ignore the centre of the table, we have to work on the totals in the horizontal and vertical margins. The method is shown in Table X C.

TABLE X C
Overcrowding and Infant Mortality Calculation of Correlation Coefficient

Infant mortality rate		Percentage of population in private families living more than two persons per room						Total
		R U 1 5-	4 5-	7 5-	10 5-	13 5-	16 5-19 5	
R U	W U	W U -2	-1	0	+1	+2	+3	
36-	-3	5 (+30)						5
46-	-2	9 (+36)	1 (+2)					10
56-	-1	10 (+20)	4 (+4)	1 (0)			1 (-3)	16
66-	0	4 (0)	7 (0)	5 (0)	2 (0)			18
76-	+1	2 (-4)	5 (-5)	4 (0)	1 (+1)	1 (+2)		13
86-	+2		2 (-4)	2 (0)	2 (+4)		1 (+6)	7
96-	+3		1 (-3)	2 (0)	2 (+6)	1 (+6)	1 (+9)	7
106-116	+4		1 (-4)		1 (+4)			2
Total		30	21	14	8	2	3	78

R.U. = Real units W.U. = Working units

For instance we see from the right hand totals that in 5 towns the infant mortality rate was between 36 and 46 in 10 between 46 and 56, in 16 between

56 and 66, and so on. Of this distribution we want the mean and standard deviation. As shown previously, these sums are more easily carried out in "working units" instead of in the real, and larger, units. In these units we have 5 towns with an infant mortality rate of -3, 10 with a rate of -2, and so on. In working units, therefore, the sum of the rates is +5 and the mean rate is $+5/78 = +0.06$. The mean in real units is, then, 71 (the centre of the group opposite 0) $+ 0.06 \times 10$ (10 being the unit of grouping) $= 71.6$. To reach the standard deviation we continue to work in these units. Measuring the deviations from the 0 value instead of from the mean there are 5 towns with a squared deviation of $(-3)^2$ and these contribute 45 to the sum of squared deviations, there are 10 towns with a squared deviation of $(-2)^2$ and these contribute 40 to the sum of squared deviations.

In working units the sum of squared deviations from 0 is thus found to be 237. The mean squared deviation from 0 is $237/78 = 3.0385$ and from this, as correction for having measured the deviations from 0, we must subtract the square of 0.06, the value from which we ought to have measured the deviations. The standard deviation of the rates in working units is therefore the square root of $3.0385 - (0.06)^2 = 1.742$, and in real units is $1.742 \times 10 = 17.42$.

We can now work in just the same way on the distribution of overcrowding—there are 30 towns whose overcrowding index in working units was -2, 21 whose index was -1, and so on. This gives a mean and standard deviation in working units of -0.77 and 1.329 , and in real units of 6.7 and 3.49 . In this there is nothing new, the process was given in full in Section XVI.

We now need the product of the deviations from the means for the numerator of the correlation coefficient. This is easily reached by continuing to measure the deviations in working units from the 0 values and making a correction as usual at the end.

For instance, there are 5 towns the deviation of which is -2 in overcrowding and -3 in infant mortality. The product deviation is therefore +6, and as there are 5 such towns the contribution to the product deviation sum is +30. Each of these values can be written in the appropriate cell (they are the figures in parentheses in Table X C). Their sum is +107 and the mean product value is $+107/78 = +1.3718$. These deviations in working units were measured from the two 0 values whereas they ought to have been measured from the two mean values, +0.06 and -0.77, therefore as correction we must subtract from +1.3718 the product of +0.06 and -0.77 (as in the ungrouped series, the correction is the product of the distances between the points from which we chose to measure the deviations and the points from which we ought to have measured them). The numerator of the coefficient is therefore $+1.3718 - (0.06 \times -0.77)$, and the denominator is the product of the two standard deviations, so that

$$r = \frac{+1.3718 + 0.0462}{1.742 \times 1.329} = +0.61$$

(It may be noted that as the numerator is in working units the standard deviations must be inserted in the working units.)

There is we see a fair degree of correlation between overcrowding and the infant mortality rate, but at the same time Table X B shows that with towns of the same degree of overcrowding there are considerable differences between the infant mortality rates. The standard error of the coefficient is $1/\sqrt{n-1} = 1/\sqrt{78-1} = 0.11$, as the coefficient is more than five times its standard error it may certainly be accepted as "significant".

The calculation is very much speedier with the observations thus grouped and little change has been

made in the values reached as the following figures show—

	Grouped series of Table X n.	Same 78 observations ungrouped
Means—		
Overcrowding	6.7	6.6
Infant mortality	71.6	71.0
Standard deviations—		
Overcrowding	3.99	3.74
Infant mortality	17.1	17.3
Correlation coefficient	+0.61	+0.59

The regression equation is—

$$\text{Infant mortality minus } 71.6 = +0.61 \frac{17.4}{3.99} (\text{over}$$

crowding index minus 6.7) which reduces to—

Infant mortality = 2.66 overcrowding index + 53.78 (It must be noted that the values in real units must be inserted in this equation.) In other words the infant mortality rises according to these data by 2.66 per 1000 as the percentage of the population overcrowded increases by 1

A. BRADFORD HILL.

SPECIAL ARTICLES

BRITISH HEALTH RESORTS ASSOCIATION

A MEETING of the British Health Resorts Association was held at Skegness on Saturday last. The conference was well attended and the various advantages that might be derived by the sick, the convalescent, and the public from the facilities offered at the different centres in this country were brought out. The congressists were the guests of the municipality.

Lord Meaton the president of the association spoke of the inception of the movement and of its development from a winter in England movement into a body not only interested in presenting the claims of British resorts on to the attention of the medical profession and the public but also in promoting the study of the climatic and other conditions which made these resorts suitable or perhaps unsuitable as health seekers at different times of the year must have resorts selected for them. He pleaded for greater support by local authorities whose interests the association was unselfishly serving but noted the steady improvement in hotels to which he thought the notion of the association had contributed. Speaking from personal experience in many countries he held that the British hotels had nothing to fear from comparison if like were compared with like.

The chairman of the Skegness urban district council Mr J Crawshaw presided at the first session dealing with

Industry and the Health Resort

Mr A J Peterson managing director of the Spirella Company of Letchworth spoke as an employer in a firm which had made complete arrangements for the welfare of its employees. As most of the users of health resorts he said, were connected with industry it was important for employers who desired to be progressive should be told more of the advantages of these resorts for the workers. He stressed the point that with payment for holidays a movement which was advancing there would be great opportunities for health resorts placed in proximity to the centres of industry. He said that there should be talks in the factories on how holidays could be used so that holiday makers could get the best value out of them.

Mr Ernest Bevin general secretary of the Transport and General Workers Union said that the provision of holidays with full pay for the workers was one of the principal struggles of the movement he represented. The different treatment of staff public servants and others employed in more favourable occupations as against the actual

workers formed a serious grievance. Since the war the more enlightened employers were realising that the granting of holidays with pay was not only an advantage to the working person and his family but to industry itself. Unpaid unemployment moreover had risen periodically so that the whole question of what might be termed the contractual period for labour had been brought within the realm of practical politics and the Government had now set up a committee, of which he was himself a member to consider the whole problem.

THE AMENITIES OF HEALTH RESORTS

There was need for the creation of an industry to cater for the holiday needs of the workers there should be a scientific study of the whole matter and the provision of holidays for the workers would open an avenue of employment for thousands of others. He held that the British health resorts had not taken a sufficiently enlightened view to meet the requirements that this new development would entail. It had been demonstrated that a great set off against the cost of holidays to industry generally was the decrease in sick leave and absenteeism. The English climate was not an easy one for which to cater but the kind of shelter put up along sea fronts, with a glass partition in the centre was quite inadequate to meet the weather changes and yet these shelters were an absolute necessity if visitors were to derive the benefit of the sea air. And when holiday resorts were planned there must be a real drive to secure a better standard of accommodation. Although hot and cold running water in every room was so readily advertised in thousands of houses, which the workers now have to use the accommodation was quite out of date yet from a health point of view good accommodation and bright surroundings were an even bigger contribution to recuperation than medicine. Taking the British seaside resorts generally the municipalities had spent more money and were superior to continental resorts in the arrangements made to cater for the pleasures of the people. But in accommodation and cuisine they lagged behind. Here was a great opportunity for municipal enterprise which would be called for since the extension of holidays over a lengthened season would cause the question of holiday centres or homes to be dealt with. These could not be erected in every health resort and if the millions were to be catered for some development must occur. In many industries it was impractical for the whole of the workers to take their holidays during the summer months and there were three other periods in the year which offered opportunity for catering if correctly handled—the late October Christmas and Easter. The maintenance of our health resorts would be largely dependent upon catering for the masses. Amongst the so-called

middle classes the idea was sometimes prevalent that the masses were just vulgar people, and so cheap and nasty accommodation was held to be good enough. But the popular standards were rising and time would show inadequate accommodation to be a very short-sighted policy. The food catering arrangements must be improved, people were used to better fare both in homes and restaurants and would not tolerate the stodgy, unappetising meals now set before them.

PRESERVATION OF THE COUNTRYSIDE

Mr Bevin spoke earnestly on the need to preserve the beauty of the countryside and coastline. "With the planning of the health resorts," he said, "and with improved architectural arrangements, due regard must be paid to the preservation of the coastline and countryside. So many beauty spots are spoiled by building speculators and others, whose sole idea is to reap in money in one form or another, and many local authorities also succumb to the desire to share in these developments. They do not fully realise their responsibilities and do not sufficiently exercise their powers of control. It must be remembered that a holiday is not only for enjoyment, to be effective it must also be cultural and health giving, and whilst you may bring prosperity to a few citizens by allowing development to go on in an haphazard manner, it is a short-sighted policy, and local authorities may find themselves saddled in a few years with burdens they should never have undertaken. Local authorities should exercise a strict control on the erection of buildings, whether for pleasure, hotel, or housing purposes, and keep them in conformity with the best architectural standards and the traditions of the place, plus the acceptance of modern ideas. Avenues, public gardens, and vistas should be kept spacious and ample space provided for recreation and games."

He went on to plead for more attention to the case of the children, the holiday, he pointed out, was not only for the man, it was for the woman also, and the family problem was a very serious one, so that facilities for the children to play in covered shelters during bad weather must be made. He commended the action of those local authorities who provided play centres on the beach, where the younger children could be looked after by trained nurses, allowing the mother to safely leave them for a few hours. He advocated holiday camps for children. The development of inland centres he commended as preventing the coastal resorts from being overcrowded and leading to a greater use being made of our spas and hydros. Here he pointed out that the preservation of the beauties of the surrounding countryside and its historical features would in the long run lead to and hold the business.

SUITABLE CONVALESCENT HOMES

Of the employment of health resorts to a much greater extent for the provision of convalescent treatment, Mr Bevin said that trade unions, friendly societies, approved and other societies had established buildings and homes under their own management, leading to a limited form of treatment and selection whilst, at the same time, literally thousands of pounds were being spent in convalescent benefit. The whole arrangement was uneconomic and the fullest benefit was not being derived. A co-ordinated scheme, in conjunction with our health resorts, for the municipalities and the societies to take a hand in really planning convalescent home treatment was wanted.

For suitable arrangements for curative treatment and a pleasant and restful vacation it would be a real boon. But convalescent homes must not be developed on institutional lines, they must be well appointed and free from too many restrictions, while the rooms should be large and airy, and cheerfully decorated. The home should stand in its own grounds. He added that although there were quite a number of convalescent homes throughout the country for men, the number provided for women was totally inadequate.

Mr Bevin concluded by asking for a Government commission to examine the problem of planning, equipment, and co-ordination of health resorts. He said: "I should like to see the Health Resorts Association urging the Government to set up a Royal Commission to examine the whole problem of planning, equipment, and co-ordination of health resorts. The work of this Royal Commission could proceed concurrently with that of the Holidays with Pay Committee, so that as a rapid expansion of holidays takes place we can get a great drive for public development and so cater for what will become a very important and vital industry to this country. The Royal Commission should not only take into account the planning of the existing health resorts, but also the problem of equipping such resorts. There may have a very great bearing upon certain spots in the Special Areas. The trade unions who have been working on this problem of holidays with pay and now have the task of trying to weave it into our industrial fabric have created as it were a raw material for the development of our health resorts far beyond the dreams of any of those who have been engaged in the business in the past."

THE HOLIDAY ATMOSPHERE

Dr Leonard P Lockhart, medical officer, Boots Pure Drug Co., Ltd., opened with the following wide definition of a health resort—"as I understand it is any place where a holiday can be spent." Hence it followed that it should meet the needs either of the person desiring a holiday or the person who is undergoing a routine treatment or resting for convalescence. He drew sound distinctions between the holiday maker and the patient, holding the holiday atmosphere to count most in most cases, and regretting that people were not sent away more often as a preventive. From personal experience he held that care should be taken to choose only the right place to be sent away, and he believed that in the convalescent home established by Messrs Boots at Skegness, money was spent on just those things. Holidays properly based on rates of pay would reduce the sick absentees. He pointed to the holidays being taken in family groups.

Mr J J Hewlett, representing the Hotels and Restaurants Association, disclosed some of the difficulties experienced by the hotel keeper, especially in places with short seasons, reminding the audience that hotels in Great Britain were handicapped, those on the Continent were not, by Government restrictions as well as by increasing rates and taxes.

The chair was taken at the afternoon session by Dr A D F Menzies, M O H for Skegness, and the session was devoted to the consideration of

Games, Sport, and Sea-bathing

The discussion was opened by Sir Kaye Le Fleming who said that he was not speaking as a member

the Government Advisory Council on Physical Education and was omitting from his remarks any consideration of nutrition although attention to nutrition was essential in any national attempt to raise physical standards. Pleasure, he said, could not be fully enjoyed without an education in its use; it was relaxation after work and the recreation of faculties for work. The British were a games-loving people and games were the specialised ends of physical education. Hence he would give a prominent place in the betterment of physical culture to such sports as tennis, swimming and skating which produced the balanced mind in the balanced body and would put in a plea for deck tennis, a game which it was easy to provide cheaply and which, as it took up little space, could be played indoors. All these sports he thought should be available for the mass of the workers so that they would have a chance to develop a sense of pleasure in the fitness of their bodies. With regard to bathing, he pointed out that there should be attached to every bathing centre a building—call it a gymnasium—not provided with any elaborate apparatus but where while exercises could be indulged in music and opportunities for refreshment were provided. In sea bathing much of the advantage was in the free exposure of the skin to the air and the reluctance of the male sex in this direction must be overcome; women had already got over it. The medical profession would have to give more serious study to the problems connected with physical education. And with regard to Skegness, he held the centre up to praise for the efforts that had been made to supply the necessary amenities adding that such efforts must be made more freely at seaside resorts.

Dr Cove Smith said the new Government movement in favour of physical education had come none too soon. The kind of individual we want to produce is the man and woman who is fit and feels fit. It was no use in so developing gymnastics that we produced people with the muscles of a Sandow who would die in the fifties with a fatty heart. The problem was to find out how our spare time of which there would be more for many people could be best employed. Modern machine repetition work had unbalanced the average worker while artificial inducements to exercise could not take the place of exercise in the open air. He dealt with the technical aspects of sea bathing, the appreciation of which was a comparatively new development. On the authority of Fanny Burney he said its popularity dated from the time when King George III took the sea at Weymouth followed by a bathing machine containing fiddlers who played "God Save the King."

Dame Louise Mellroy attributed great virtues in any gynaecological cases to seaside treatment. She who had been accustomed to much active life at school often fell into poor health when she was deprived of this and a visit to the seaside with active exercise and bathing was of great value. The same applied to many women in sedentary occupations rather than to those whose work was more active and sometimes really heavy. Middle-aged women with tendency to fat were greatly benefited. This country was behind the Continent in its health resorts but things being equal the avoidance of vice and tiring journeys with language and customs difficulties must be remembered. The native doctor would better treat the patient understanding her psychology and her home conditions than a foreigner could. It was a mistake to try to imitate con-

tinental cooking. She supported Mr Devin's plea for more convalescent homes.

Dr Menzies gave interesting figures about the meteorology of Skegness. There was a low rainfall and a high ultra violet rate. The place was specially good for post-operative cases and their best months were April, May and October. The tonic effect was greater then than in the summer months. They were proud of their children's day nursery with its trained nurses. They were fully alive to the importance of accommodation at hotels and had made a survey last year which would show good results. Their physical culture classes on the beach were very popular.

Dr H Sanguinetti (London) referred to Prof Keatner's recent work on the effects of sea air on children and said it pointed out one way in which doctors could take a greater part in the investigations needed to place this subject on a thoroughly scientific basis.

Mrs McCrae M.B. (London) from her experience of child welfare work strongly supported the claim of the wife of the industrial worker for the benefits of the seaside. Those she could not get unless she were at the same time relieved of much of her maternal worries.

Lieut Colonel W. Byam R.A.M.C. (ret.) chairman of the Medical Advisory Committee of the A.A.O.C. in moving a vote of thanks to the chairman said many sound ideas had been ventilated which would receive the attention of his committee.

HOSPITALITY

In the evening the members of the conference along with members of the local council and their ladies were entertained at a banquet at the County Hotel. Lord Meston proposed the toast of Skegness to which the chairman of the council replied giving many interesting details as to the growth and progress of the town. Councillor C. T. Jessup proposed the health of the association to which Dr Alfred Cox the secretary replied. The banquet which was enlivened by songs was a pleasant termination to a most successful conference.

MEDICINE AND THE LAW

Successful Claim against Widow of Doctor

THE litigation in *Connolly v. Rubra* forms a menacing precedent for the medical profession. A civil servant named Connolly dies of tuberculosis. His right of action does not die with him. His widow sues Dr Rubra, who attended the patient and alleges negligence in diagnosis and treatment. Dr Rubra is himself too ill to appear in court. He dies before the case is decided and damages to the amount of £3000 are awarded against his estate. The Court of Appeal declines to interfere.

Lord Justice Cresswell delivering the unanimous judgment of the court on April 7th emphasised the difficulty of the case. The original trial had taken place before Mr Justice Greaves Lord in circumstances of very great difficulty, inasmuch as the chief witness for the defence was not available. The trial judge had to decide whether he should accept the evidence of the plaintiff Mrs Connolly as to conversations she had with Dr Rubra. As the Court of Appeal observed Dr Rubra could not be called

to give his version of the facts, all that could be done was to criticise Mrs Connolly's evidence by reason of letters she had written and by reason of the absence of corroborative entries in Dr Rybra's books. Then there was another "very difficult question indeed." The plaintiff had to establish not only that Dr Rybra was negligent but also that his negligence was the cause of shortening the life of the patient. Lastly "the question of damages was also one of great difficulty." It was difficult for Mr Justice Greaves Lord to assess the amount, he must not fail to take into account the common risks of life to which all persons, even if healthy, are subject. It was also "very difficult for the Court of Appeal to interfere with his judgment, even though they might happen to think themselves that the award is rather on the generous side." The Court of Appeal was not entitled to assume that the trial judge failed to take into account the fact that Mr Connolly was "a frail and chesty patient." Unless the trial judge took into account matters which he ought not to have taken into account, or failed to take into account matters which he ought to have taken into account, the Court of Appeal would not upset his award. On the material questions of fact, said Lord Justice Greer, the trial judge, having to decide "between a living widow and a dead defendant," was entitled to make up his mind on the evidence given by the widow, provided that he took into consideration all the relevant criticisms which could be made with regard to her evidence.

It remains to summarise the observations of the Court of Appeal on the issue of professional negligence. Lord Justice Greer remarked that tuberculosis is one of many diseases with which a general practitioner commonly has to deal. If the doctor has any doubt whether or not there are signs of tuberculosis, it is his obvious duty to make further examination to resolve that doubt and to make it clear that nothing further can be done for the patient. A doctor who is not over confident of his own judgment will, when he finds himself in a difficulty, call in an expert and decide according to the expert's views. To enable the expert's opinion to be of value it is not enough to do what Dr Rybra did at a later period—namely, to take one specimen of the sputum and be content with that if the result is negative, he must take many specimens of the sputum and, in addition, he ought to have an X ray examination and to watch the patient to see whether he is progressing or going back as time goes on. "Dr Rybra unfortunately did none of those things." Ought he to have suspected tuberculosis when he diagnosed bronchitis? It was here that the widow's evidence was crucial. She gave evidence at the trial of interviews she had with Dr Rybra in December, 1930, she said she then told him of an effusion of blood from the patient's mouth in the summer holidays of 1929, of streaks of blood in the sputum towards the end of 1930, and of blood stains on his handkerchief. Believing the widow's evidence, the trial judge came to the conclusion that at the beginning of 1931, or at the end of 1930, Dr Rybra had shown such want of competent and ordinary skill and care as justified the claim for damages. There the case stands after an attentive hearing and a judicial review with which no doctor can quarrel. All must sympathise with Mrs Connolly and her children in their loss. Nobody disputes the bona fides of the evidence for the plaintiff. The state of the law nevertheless will cause the medical profession grave misgiving. Does it not often happen that the comments and statements made by a patient's relatives take on a quite different com-

plexion when one hears the version given by the doctor? Is it fair that the law should contemplate a decision upon the evidence of one side alone, and that a deceased doctor's estate should be liable for damages to the substantial amount of £5000 when, had the doctor's own evidence been available, the plaintiff might not have succeeded in establishing her case beyond doubt? The Court of Appeal saw the difficulties of the case. If these decisions between a living widow and a dead doctor have these heavy consequences, a disturbing distraction will embarrass the practitioner's mind.

The Doctor's Bad Debts

Though the Merseyside Medical Practitioners Association was formed to promote other and more general objects than the mere collection of bad debts, its efforts in the latter direction have attracted publicity and may be imitated elsewhere. One newspaper has stated that the Merseyside doctors estimated that outstanding accounts owing by local patients to medical men and dentists exceeded a total of £100,000. The defaults are represented as being on an unusually large scale. To prevent them from growing still larger, the members of the association undertake to furnish it periodically with lists of patients whose accounts are long overdue. The debtors are given a further chance to pay, if the chance is not taken the names are placed on a "defaulters' list," circulated confidentially to members. The doctor or dentist whose services are asked for by one of these defaulters is thus in a position to request payment in advance. This system simply applies to medical practice a method of protection well known elsewhere. Barristers' clerks have their own ways of knowing the firms of solicitors from whom no brief should be accepted without the accompanying fee. London shopkeepers are not entirely unarmed against customers who habitually open accounts without the means or intention to pay. Defaulters whom it is necessary to place on a "black list" are a nuisance, having exhausted their credit in one direction, they repeat the process in others. The plan adopted in the Merseyside district will protect newcomers from being imposed upon. Unless there is bad faith or breach of confidence in its operation, it is privileged and cannot give rise to libel actions. A doctor who of course attend a patient on the understanding that his service is gratuitous. In the absence of any such understanding, he is entitled to be reasonably remunerated for his professional work. He is certainly not obliged (unless there is some contractual obligation on his part) to attend any patient who chooses to send for him, nor is there anything to prevent him from stipulating that his services shall be paid for on a cash and not a credit basis.

A Mistake in Dispensing

At a Lancashire inquest on the death of a woman aged 60, during an operation shortly after the administration of a local anæsthetic, it appeared that the hospital dispenser had made a mistake. He had been asked to supply a one per cent solution of procaine hydrochloride, he had supplied not procaine but percarne hydrochloride. The coroner explained that, while procaine was a relatively harmless drug, percarne was deadly in anything but therapeutic doses. The patient had been in a serious condition without surgical operation her expectation of life was limited, but her death was due to the error. It was easy, observed the coroner, to be wise after the event. A verdict of "death by misadventure" was recorded.

ARTIFICIAL FEVER THERAPY (PYRETOTHERAPY)

FIRST INTERNATIONAL CONGRESS

On March 20th at the College of Physicians and Surgeons Columbia University New York City Dr Allen O Whipple, professor of surgery Columbia University welcomed the delegates to the first international congress of artificial fever therapy. Dr Pierre Abram, professor of pathology University of Paris replied and messages were then read from Prof A. d'Arsonval and from Prof. Julius Wagner Jauregg who were unable to be present. Prof d'Arsonval referred to his interest since 1890 in the physiological effects of currents of high frequency especially the painless rise in the body temperature which follows the use of the diathermic current. His friend Ferrié had actually used a medical type of apparatus for his first trials of wireless at the Eiffel Tower. Nowadays the position has been reversed and the wireless industry was providing short-wave apparatus for the physician. Prof Wagner Jauregg said that he first began injecting tuberculin to produce an artificial fever in cases of mental disease as early as 1891. Since 1900 he had been concerned primarily with general paralysis of the insane; some of his cases treated over 20 years ago with tuberculin were still in excellent health. He stressed the value of combined fever treatment and chemotherapy and concluded by saying that it should not be the aim of these combined methods to destroy the pathogenic organisms in the body but to improve the resistance of the organs and tissues against them in order that the infection would eventually die away.

Over 100 papers was submitted at the congress of which 56 were actually read. A few of them are summarised below.

PHYSIOLOGICAL EFFECTS OF FEVER TREATMENT

The first day of the congress was chiefly devoted to the physiology and pathology of artificial fever and J G Gibson, J Kopp and W A Evans (Harvard and Boston Mass.) submitted a paper on changes in blood volume during therapeutic fever. They found that the diminution in plasma volume was closely related to the intensity of sweating and weight loss. Intravenous administration of fluids soon restored the blood volume to normal. M Pijoan, Gibson and Kopp (Boston and Harvard University) had investigated the acid base balance during therapeutic fever and ascertained that if there was an excessive dehydration a pronounced alkalosis might occur. J D Hardy (New York) had studied the mechanism of heat loss from the human body and confirmed the view that heat loss is due to radiation, convection and vaporisation and depends largely on the environment. S L Warren (Rochester N Y) contributed an interesting paper on chloride balance in artificial fever. The maintenance of a proper fluid intake throughout the treatment was vital especially when long applications of from 10 to 24 hours were undertaken. Under suitable conditions the water loss by sweating might be compensated for by the ingestion of between 200-300 ccm of fluid per hour. Salt should only be administered when sweating diminished. A H Dowdy and F W Hartman (Detroit Michigan) contributed a paper on the preparation of patients for fever therapy with special reference to sedatives and fluid intake. They advised the use of a carbamide sedative in preference to any of the barbiturate acid group. It should be given first the night before

the treatment and the last dose on the following morning about one hour before treatment was begun. During the treatment ice drinks of 0.6 per cent saline and 3-0 per cent glucose were given orally.

RHEUMATIC FEVER, CARDITIS AND CHOREA

On the second day of the congress the use of artificial fever in a miscellaneous group of diseases was considered. E E Simmons and F Lowell Dunn (Omaha Nebraska) reported the treatment of 15 cases of acute rheumatic fever for periods varying from 8½ to 48 hours with temperatures of 103-106 F. Thirteen patients received complete relief from joint pain and swelling, two had relapses in from 2 weeks to 2 months and a third had a recurrence of chorea 21 months later. They believe that fever therapy reduces the symptomatic activity of the rheumatic fever and shortens the duration of the attack.

Three interesting communications on rheumatic carditis and chorea were made by S L Osborne, M L Blatt and C A Neumann (Chicago Illinois) by Lucy Porter Sutton and Katherine G Dodge (New York) and by C H Barnacle, J R Ewalt, and F G Ebaugh (Denver Colorado). Osborne and his collaborators had treated 25 children with chorea ranging in age between 4 and 16 years without encountering any difficulties. Nine cases were very severe, 6 moderately severe and 10 were considered mild. The average number of treatments given was slightly less than 4 and the average stay in hospital less than 16 days. The choreic movements ceased in 22 of the cases. Sutton and Dodge have been using fever therapy since 1930 at the Bellevue Hospital New York. They first employed injections of typhoid paratyphoid vaccine, subsequently they have treated 50 cases of chorea with a radiant energy cabinet the temperature maintained was between 105 and 106 F for from 4 to 5 hours. Most patients received one or two treatments, early cases however severe responded most quickly to fever therapy. Altogether 400 cases were treated. A preliminary analysis of 90 treated cases compared with 75 untreated revealed a definitely lower incidence of rheumatic manifestations including polyarthritis and carditis in the treated group. The authors expressed their conviction that fever was capable of cutting short an attack of chorea; that the presence of active carditis was not a contra indication and that fever therapy might in fact be a valuable therapeutic measure in rheumatic carditis. Barnacle and his colleagues had treated 45 cases of rheumatic carditis and chorea by physically produced fever. 14 were severe, 29 moderate and 2 mild. They preferred daily fever sessions of only 2½ hours duration at temperatures of 105-105.4 F. The average number of treatments given was 12.6, the average total duration of fever 32.9 hours and the average time under treatment 22 days. All the patients responded to fever therapy though there were three recurrences. Nineteen cases had rheumatic carditis and 12 of them showed a lasting improvement in cardiac function.

RHEUMATOID ARTHRITIS AND NEURITIS

The communication of R M Stecher and W M Solomon (Cleveland Ohio) concerned the treatment of acute non-specific infectious arthritis with artificial fever. Their 20 cases all suffered from an acute form of atrophic rheumatoid arthritis. Twelve patients received prompt relief and apparent cure while 8 were partially relieved. The course of the disease was favourably modified in every case. Temperatures of 106 F were maintained for from 2-2½ hours.

with an average of 7.3 hours in the cases showing complete recovery, and 5-30 hours with an average of 17 hours in the patients who eventually experienced only partial relief. Five out of 8 patients showing radiological evidence of joint damage were in the group which required longer treatment. The authors interpreted their results as an indication of the importance of prompt administration of fever treatment in order to avoid or minimise joint damage. A. E. Bennett and P. T. Cash (Omaha, Nebraska) dealt with the relief of neuritic pain by employing lower temperature levels and for from 2 to 4 hours' duration. Out of 20 cases of sciatic neuritis treated, 16 were completely relieved by fever therapy combined with epidural injections. Three out of 6 cases of brachial neuritis were permanently relieved by fever treatment alone. Four cases of toxic infectious polyneuritis obtained complete relief as did 3 cases of post herpetic neuralgia.

DISSEMINATED SCLEROSIS

K. M. Walthard (Geneva) and W. Kerr Russell (London) dealt chiefly with electropyrrexia in the treatment of disseminated sclerosis. In 4 of the latter's cases the gait deteriorated after treatment, in 5 there was no change, and in 6 there was improvement. Both authors stressed the difficulty of assessing the value of fever therapy in a disease characterised by natural remissions.

OPHTHALMOLOGY

J. S. McGavic (Cincinnati, Ohio) presented a preliminary report on 42 cases of various ocular diseases. He had found that in gonorrhoeal ophthalmia the fever therapy seemed to increase the amount of pus formed in the conjunctival sac following the first and second treatments, thereafter the discharge steadily diminished and smears became negative in a short time. Seven cases of syphilitic interstitial keratitis showed most impressive results. Patients were generally able to keep their eyes open after one or two treatments. A shorter course and fewer permanent synechiae were noted in cases of syphilitic irido-cyclitis. Treatment was given every other day for 5 hours, temperatures of 105°-107° F being employed.

THERMAL DEATH TIME OF THE MENINGOCOCCUS IN VITRO

Mary L. Moench (New York) had studied the heat sensitivity of 15 strains of meningococci in vitro at temperatures used in fever therapy. A semi-solid veal infusion agar was used for the cultures. At temperatures ranging from 40°-42° C all strains except one showed reduction or cessation of growth within 5-7 hours, the maximum reduction occurring at 41° C and over. Dr. Moench considered fever therapy to be worth trying as an adjunct to other treatment in carefully selected cases of meningococcal infection where serum therapy had failed or could not be used.

SYPHILIS

On March 31st six papers were devoted to syphilis. A. Bessemans (Ghent) outlined his experiments with hyperpyrexia. He found that the treponemata of both rabbits and man rapidly became immobile and disappeared after a temperature of 42° C for 1 hour or 40° C for 2 hours. L. E. Hinsie and J. R. Blalock (New York) gave a survey of 12 years' work in a paper on serology in general paralysis of the insane. 326 patients were treated by one of four different methods of treatment: malaria, tryparsamide, and electropyrrexia with and without

tryparsamide. The serological findings were analysed at yearly intervals over a 12 year period. The most favourable clinical and serological results were observed in those patients who received fever therapy followed by chemotherapy. For purposes of prognosis, the authors advocated serological examination three or four years after treatment had been started. F. R. Menagh (Detroit, Michigan) had treated 19 syphilitic cases with hyperpyrexia combined with chemotherapy, more than a half showed improvement, and nearly one half of these had been treated previously for an average of five years by chemical means without success. Of the 45 cases of general paralysis of the insane and 27 of tabes dorsalis the best results were obtained in the early cases with minimal tissue damage. Perforating ulcers and Charcot's joints were favourably influenced as were the 10 cases of optic atrophy. Ten cases of asymptomatic neurosyphilis and meningovascular syphilis did exceptionally well. W. M. Simpson and H. W. Kendall (Dayton, Ohio) had formed the opinion from a study of 34 cases of early syphilis under combined therapy that artificial fever fortifies and intensifies the curative action of chemotherapeutic agents. Fever therapy alone or chemotherapy alone was inadequate in a high proportion of control cases. C. A. Neymann (Chicago, Illinois) claimed that electropyrrexia had increased the percentage of improvement in general paralysis of the insane to 21 per cent, and that the combined fever treatment and chemotherapy cured most cases of early syphilis promptly and permanently in one or two months.

GONOCOCCAL INFECTIONS

On March 31st C. M. Carpenter and Ruth A. Bock (Rochester, N.Y.) dealt with the thermal death time of 250 strains of gonococcus at a temperature of 41.5° C (106.7° F). The heat resistance of the organisms varied from 6-34 hours, the mean being 16.1 hours. The figures for strains isolated from patients and their consorts showed a close agreement. S. L. Warren (Rochester, N.Y.) found that 87 per cent of 100 consecutive cases which were given fever treatment for a period equal to the thermal death time of the isolated organism at 41.5° C were cured bacteriologically and clinically by the end of the treatment. He considered that the thermal death time test was a practical guide in determining the length of the fever treatment necessary for each individual patient. W. Bierman and E. A. Horowitz (New York) described the method by which they had treated 121 cases in the last six years, with success in 113. They first raised the systemic temperature by physical means and then applied additional heat locally to the pelvic organs, generally with the diathermic current, for a period of 7 hours. The systemic temperature was kept between 105.5° and 106.5° F for 12 hours, during 7-8 hours of which the pelvic temperature was maintained at 109°-110° F. One to three treatments were given, but the average was only 1.4. One third of the patients had epididymitis and the pain generally disappeared during the first treatment. F. A. Krusen, L. G. Stahlke and L. M. Randall (Mayo Clinic, Rochester) also contributed a paper on combined systemic and local heating in gonococcal infections. 361 patients were given 1698 artificial fever treatments at an average temperature of 106.7° F. The average number of treatments per patient was five. Forty patients who proved refractory to systemic fever alone were given additional local heat, and 80.5 per cent then developed negative cultures. Ten hour sessions of fever were given, 92.5 per cent of all the patients who completed

their treatment had negative cultures. They believed that often a single long session of fever combined where suitable with additional local heat offered the most satisfactory method of treating gonococcal urethritis, cervicitis and pelvic inflammatory infection. A. E. Belt and A. W. Folkenberg (Los Angeles California) found that 92.3 per cent of their cases were consistently free from organisms following one 10 hour session of fever.

E. H. Parsons, P. N. Bowman and D. E. Plummer (Denver Colorado) compared the results of fever treatment in male patients with those obtained by injections, irrigations and massage. They stated that the number of cures in the fever treated group of acute prostatitis and complications was significantly greater than in the control group and that the fever cases only required a quarter of the time needed for the controls. Acute prostatitis invariably disappeared after one fever treatment. J. A. Troutman, H. V. Stroupe and D. J. Devlin (New Orleans Louisiana) described their experiences in the treatment of 278 patients with gonorrhoea; they found that fever sessions of five hours gave early and complete relief in cases of acute epididymitis, acute arthritis, and acute prostatitis. T. G. Schnabel and F. Fetter (Philadelphia Pennsylvania) had treated 130 cases of gonococcal infection with an average of 4½ treatments. Thirteen out of 15 cases of gonorrhoeal vulvo vaginitis were cured. Out of 93 patients with gonococcal arthritis 54 were cured and 30 improved. Comparing the arthritis cases treated by fever with the controls they found that fever therapy appreciably shortens the period of hospitalisation and improves the prognosis. H. A. Freund and W. L. Anderson (Detroit Michigan) described the recovery of a case of gonorrhoeal endocarditis treated by artificial hyperpyrexia and O. G. Hazel and W. B. Snow (New York) a case of gonococcal septicaemia with purpura and arthritis which was successfully treated in this way.

SOCIAL EVENTS

There was an excellent exhibition at the Waldorf Astoria Hotel New York at which 11 firms demonstrated their apparatus. On two evenings films were shown dealing with the various methods of inducing hyperpyrexia and the results obtained. On March 31st New York physicians entertained the foreign guests to luncheon. The congress banquet was held on March 30th when the French delegation conferred the Legion of Honour on W. R. Whitney, C. F. Kettinger, W. M. Simpson and W. Bierman the indefatigable secretary of this successful congress.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

EDINBURGH ROYAL INFIRMARY

THE managers of the Royal Infirmary have issued an appeal for £200,000 to complete the cost of the many extensions that they are making. An interesting development is the return of the Maternity Hospital to the Royal Infirmary for in the year 1757 the first attempt to provide institutional facilities for maternity cases was in an attic in the old Infirmary in Infirmary-street. Forty years later a maternity hospital was established independently on the site of what is now the University Union and in 1870 the present Edinburgh Royal Maternity and Simpson's Memorial Hospital was opened in Lauriston place. Since its opening the number of infants born within

the hospital has risen from 150 in the first year to 2500 during 1936. In addition 950 cases were attended to in their own homes in the district. No fewer than 40 per cent of the total births in Edinburgh occurred under the care of this institution. It is interesting therefore to note that the Maternity Hospital is again to come under the wing of the Royal Infirmary and the new Maternity Pavilion which is to have 130 beds should be ready for occupation in 1938. An advantage of this new development is that the Maternity Pavilion will be adjacent to the present gynaecological wards.

A new nurses home providing for additional accommodation for 300 nurses is also nearing completion. The radiological department has been equipped with the most modern apparatus and new departments for orthopedics and neurosurgery are being constructed. A new Dermatological Pavilion in which the venereal diseases department is also situated has recently been opened. In view of these extensive recent developments it is not surprising that the managers have some anxiety for the future financial position of the institution.

UNIVERSITY HALL, EDINBURGH

To celebrate the jubilee of the opening of University Hall a dinner is to be held in the North British Station Hotel on Saturday May 20th. A large number of old residents of the various houses have intimated their desire to attend and it is hoped that any who have not already done so and who wish to come will write without delay to Sir Thomas Whitson, 21 Rutland-street Edinburgh.

BUCHAREST

(FROM OUR OWN CORRESPONDENT)

MATERNITY AND CHILD WELFARE IN ROMANIA

THERE are at present 4000 qualified midwives in Rumania far too few for the country's needs. Unqualified women who are not properly trained have therefore to be employed in many districts and since there are not enough doctors available for consultation in difficult cases the mothers are not very well served. Dispensaries dealing specially with the protection of mothers and children number 107; most of these are managed by private charitable organisations with government subsidies. The conditions for the conduct of labour are fairly primitive in the villages and the risk of infection is great. Confinements are still often conducted in a bed of straw and in some remote parts of the kingdom there are no professional midwives of any kind handy and the labour is conducted by a member of the family. For complicated cases there are 22 maternity homes in the country in connexion with hospitals or university clinics and 20 smaller ones are maintained by private charity. The Minister of Public Health has declared his intention in 1937 to establish maternity homes in every county hospital.

The infant mortality rate is very high in Rumania. According to Prof. Meinescu who is director of the Institute of Hygiene and Public Health the rate for the last five years (1931 to 1935) has varied between 174 and 192 per 1000 live birth. This high rate is attributed to the ignorance of the mothers about the hygiene feeding and clothing of infants. The care of infants is now to be taught to senior girls at secondary schools and to university students. In the villages also nurses will lecture to wives and

to untrained midwives Travelling clinics and dispensaries already visit some villages twice a month and it is hoped to extend this service to all counties in the kingdom

INTERNATIONAL CONGRESS OF MILITARY MEDICINE AND PHARMACY

The ninth international congress of military medicine and pharmacy will be held in Bucharest from June 2nd to 10th The aims of the congress, which has been held in previous years at Brussels, Rome, Warsaw, Paris, London, Hague, and Madrid, are (1) to study practical methods of handling and treating wounded and sick soldiers, (2) to maintain good relations between the sanitary officers of various nations, and (3) to arrive at certain international conventions designed to lessen the horrors of warfare The committee entrusted with the organisation of the congress consists of civil and military medical members, and is presided over by Surgeon General Dr Ilescu The scientific programme includes the discussion of six problems, the opening addresses at each discussion will be given by representatives of different nations The organisation of sanitary services in operation on the field and at sea will be described by members from England and the United States Germany and Yugoslavia supply the principal speakers on the transport, hospitalisation, and treatment of gassed patients, and Swiss and Japanese delegates will discuss the use of the different colorimetric analyses in the laboratory Dentistry, with especial reference to edentulous soldiers, is the subject allocated to Greece

and Holland, while France and Turkey will supply material for a comparative study of the alimentary of sick and wounded soldiers in time of war and peace The organisation and functions of the surgical service attached to mechanised units will also be discussed

The reports will be published in English, French, German, Italian, and Spanish Membership of the congress is open to doctors, dentists, veterinary surgeons, pharmacists, or administrative officers attached to military, naval, or air force services The registration fee is 1000 lei (about 30 shillings) which entitles members to receive official publications and to join in festivities arranged in connexion with the congress Further information can be had from the secretariat general, Institutul Sanitar, Militar, Bucuresti, II, Rumania

TREATMENT OF ACUTE SORE THROAT WITH BISMUTH

At a recent medical congress Dr Mayersohn reported experiences with the administration of bismuth in acute sore throat He was induced to give a trial to this practice by favourable reports published from the university clinic of Rio de Janeiro According to the reports the symptoms of any kind of acute or specific sore throat were greatly reduced within 5-6 hours by the application of one or at most two intramuscular injections of bismuth Dr Mayersohn had applied this method in his hospital and private practice to 1180 cases with only 48 failures A bismuth preparation containing 0.06 to 0.08 grams of bismuth in one dose is suitable for trial

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM A TADDYGADDY

IV

"That it may please thee to shew thy pity upon all prisoners and captives"

THE men who compiled the Litany had big hearts and wide understanding They thought of everybody Perhaps there was more time for thinking in their day, when everybody was not in such a desperate hurry to get somewhere, or do something else Not so long ago a wise bishop suggested, in the course of a discussion on the alleged conflict between Science and Religion, that what men should do was sit back and consider the multitude of facts and alleged facts accumulating all the time, and do a bit of sorting In other words, he asked men to sit down and think

* * *

If they would do that it might be that they would turn their minds to the problem of prisoners and captives to the tragic fate of those who have been deprived of liberty, sometimes for years I am referring now to those unfortunates who, for this reason or that, have been certified "M.D.," mentally deficient, and confined in a colony for mental defectives What proportion of those confined and shut up I have wondered often, really are so mentally afflicted that they need segregation for their own safety or the safety of others? I have made attempts from time to time to do a little towards finding out, and more than once I have been startled I was assured not so very long ago that, in the opinion of an official person wielding considerable power, any

young woman, if poor, who produced more than an illegitimate child should be regarded as morally defective and, if possible, certified and shut up I am assured, quite recently, by an official holding a position of the first importance and power that in his opinion a single act of childish sexuality was, in itself, a sufficient reason for keeping a boy of nineteen in a colony for an indeterminate period That boy had been certified "feeble minded" in spite of the fact that for two years he had kept his job to the complete satisfaction of his employers, and had earned good money For two years, also, he had served satisfactorily in the Territorials

* * *

I have an uneasy feeling that there are powerful people, officials with official mentality, who can do nothing harmful in depriving young people of liberty solely because the young people do not conform to their, often quite arbitrary, standards of intelligence and conduct Intelligence tests are in favour of day people with card index minds I submit they may be, and sometimes are, exceedingly dangerous 5 years ago I walked into a magistrates' ante room and fired off a salvo of mental intelligence tests at two magistrates sitting there I had no difficulty in demonstrating to them that they were, according to accepted standards, both mentally deficient One of them was the magistrate who did all the certifying after medical examination, of the alleged M.D.s of that district They were annoyed The certifying one was quite cross about it, particularly when I urged him to consider the moral of the experience

had tried upon him. It was no use. He was an ex-schoolmaster, convinced that he had nothing to learn from anybody.

Do you remember the little cages each with its little bird that used to hang in clusters outside the shops and houses in Seven Dials? It was a depressing spectacle. Unfortunately, very few of us ever go and look at the captives in our mental homes or colonies for mental defectives. Once a young person is immured there he seems to be forgotten. He is visited officially by officials and semi-official visitors but by how many non-official persons? For that matter what do most of us know about the inside of any State, or municipal, institution? I was struck by the speedy return home from a municipal tuberculosis sanatorium of people who had gone there filled with hope. I made inquiries. One reply was suggestive: 'It's all so dull. There's nothing to do and nobody seems to care. There's a billiard table we can use in the evenings but the cues have no tips. There are cards in the huts but there's never a complete pack. I went and had a look for myself. The complaint was well founded. There was nobody who seemed to care: nobody to whom a patient could pour out his griefs little or big.'

There has been much discussion concerning voluntary versus municipal in the hospital world. So far as the purely business, the financial, aspect is concerned the municipal advocates have it every time. But so far as the human aspect is concerned the voluntary advocates win hands down. In voluntary institutions the inmates are not at the mercy of officials: in State or municipal institutions they are. That I submit is where a great deal of trouble lies. We members of the visiting staff of a voluntary hospital go in and wander about as we please talking to the patients, listening to their grouses. We sense the spirit of the place. State and municipal institutions however materialistically efficient lack that human element. In mental homes in colonies for mental defectives it seems to be completely non-existent. The inmates are cut off from contact with the outside world.

Is this all unduly serious for the Grains and Scruples page? I hope not. I am writing as a Taddygaddy a practising G.P. and I prefer to write about subjects that concern my immediate job. The unhappiness—particularly the preventable unhappiness—of other people especially young people is very much the concern of all of us. I feel in my bones that all is very much not well in the officially run, officially controlled institutions in which young people are kept captive. I am impelled to say that not merely because of my own observations, but because of things said to me by other people of good will notably a Roman Catholic priest of vast experience and the widest possible sympathies who told me so lately as to day of his acute apprehension and unhappiness concerning the fate of young persons condemned to what amounts in practice to an indeterminate sentence of deprivation of liberty.

If I seem to finish up my series on a somewhat bitter note it is because circumstances quite recently have caused me to feel bitter—on behalf of young people who are defenceless when confronted by the stern arm of Authority. We doctors who practise in and about back streets see much of the seamy side of life. We do what we can to mitigate it but that

is not very much. We can, however, give some sort of publicity to abuses when we meet them—if we will. That is why I have made this the concluding article. It is very far from complete for reasons which I need not specify. I have been dealing recently direct with Authority which has been entirely kind and considerate and courteous but so far I have not succeeded in persuading it to do anything. The unfortunate confined weak ones for whom I have been contending are still confined. So far as I can see they are likely to go on being confined.

What is the matter with Authority? What is wrong with the Official Person? There is, hung up in one of our cathedrals—I think it is Chester—an old poem whose message seems somehow not to have reached the world of officialdom. This is how it finishes:

Give me a sense of humour Lord
Give me the grace to see a joke
To get some happiness from life
And pass it on to other folk.

That message, I submit, if accepted and acted upon by us all would serve as solvent for many of the anomalies and acts of seeming injustice that perplex us.

May I turn in conclusion to another old world writer? I open his book at random, and this is what I light upon:

Mercy will soon pardon the meanest

That is a sentiment which should appeal to us who as poor men's doctors see so much know so much of conditions under which the meanest is not pardoned. Rather is he not infrequently shut away from the sight of men and only too often forgotten.

*** This concludes the four articles by Taddygaddy. Next month a Medical Economist will be responsible for these columns.—ED.]

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED
APRIL 10TH 1937

Notifications.—The following cases of infectious disease were notified during the week: Small pox 0; scarlet fever 1013; diphtheria 912; enteric fever 21; pneumonia (primary or influenza) 1101; puerperal fever 53; puerperal pyrexia 124; cerebro-spinal fever 30; acute poliomyelitis 11; acute polio-encephalitis 0; encephalitis lethargica 4; dysentery 18; ophthalmia neonatorum, 6. No case of cholera plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 10th was 3263 which included: Scarlet fever 519; diphtheria, 91; measles 40; whooping-cough 528; puerperal fever, 14 mothers (plus 11 babies); encephalitis lethargica, 233; poliomyelitis, 1. At St. Margaret's Hospital there were 19 babies (plus 6 mothers) with ophthalmia neonatorum.

Deaths.—In 127 great towns including London there was no death from small pox, 2 (0) from enteric fever, 11 (0) from measles, 0 (0) from scarlet fever, 32 (11) from whooping-cough, 41 (0) from diphtheria, 51 (15) from diarrhoea and enteritis under two years and 112 (10) from influenza. The figures in parentheses are those for London itself.

There were 4 deaths from enteric fever and 4 from diphtheria at Liverpool. Four deaths from measles were reported from Birmingham. Leeds and Middlesbrough each reported 3 fatal cases of whooping-cough.

The number of stillbirths notified during the week was 278 (corresponding to a rate of 31 per 1000 total births) including 34 in London.

PUBLIC HEALTH

Mental Health in Scotland

THE number of insane persons under the General Board of Control for Scotland in 1936¹ was less by 103 than in the year before. The decrease is not high in comparison with the total figure, which is just under 20,000, but it is reassuring to see that the number has not risen. There is a corresponding small decrease in the average annual admissions to institutions over the last five years. More and more patients are now being treated in the observation wards of poor law hospitals and in nursing homes, and fewer patients with a good expectation of recovery are being sent to asylums. Nevertheless, the asylum recovery rate remains as high as one third of the number admitted. The Mental Treatment Act, 1930, does not apply to Scotland—a fact of which one is reminded by the use throughout the report of the traditional terms “asylum,” “lunatic,” and “pauper”—but the Scots law allows voluntary patients to be received into asylums, and the increase in the numbers of voluntary admissions has been steady and continuous. The Board, however, report a steady accumulation of certified patients in institutions. The result of this accumulation is, they say, that all asylums are now more or less fully occupied and most of them are overcrowded. They suggest that the problem could be partly met by providing more observation wards and establishing out-patient clinics to encourage early treatment still further. The mere substitution of “mental hospital” for “asylum” will not, they think, entirely remove the inherent public dislike of institutions, and although the problem of detention has to be met they regard as much more urgent the problem of providing treatment at a stage when it is likely to be effective. They therefore strongly recommend to the directors of all Royal Asylums the establishment of clinics entirely apart from the mental hospital but under the administration of its expert staff. Similar clinics, both resident and out-patient, should, they say, be provided by local authorities in association with general hospitals and supervised by expert psychiatrists. Municipal authorities would probably need an Act of Parliament to permit them to set up these new services.

SHORTAGE OF STAFF

Scotland appears to suffer from shortage of staff in much the same way as this country, with the result that research and treatment are badly hindered. The service therefore does not attract as many first class men as it should, for the medical officer is overburdened with routine duties and advancement is slow and uncertain. A familiar vicious circle is thus created. A further burden is thrown on the medical staff by the absence, in many asylums, of lay officers such as stewards, farm managers, and dispensers. Not only, therefore, are the medical staff unable to devote sufficient time to treatment within the asylum, but they are unable (except in the large towns) to carry out extra institutional services in out-patient clinics and observation wards. On the other hand, the possibilities of guardianship are used fairly fully and the system is working well. The reports of some of the deputy commissioners throw an interesting light on its everyday realities.

Compulsory Pasteurisation of Milk

The logic of facts is directing more and more attention to the need to extend control over the safety of the milk supply of this country. For a number of years milk has been a much discussed article, but along two distinct though really interrelated lines. The attention now paid to problems of nutrition always leads to renewed emphasis upon the nutritive value of milk and the need for more of it being consumed. For a great many years the medical profession has emphasised that the milk consumed in large areas of the country is a definite and important factor in the spread of disease, and while equally emphatic as to the nutritive value of milk submits that it must be safe milk. The existing legal powers are demonstrably inadequate to solve the problem. The very widespread outbreak of enteric fever last year in certain seaside towns, spread by raw milk, and other recent outbreaks also spread by raw milk in Doncaster and elsewhere show how necessary and urgent is the problem of adequate control. While the risk of the spread of bovine tuberculosis can be removed by the elimination of tuberculosis from our dairy herds experience shows that this is not yet a practical measure and at the best must take a great many years to be made effective. The only satisfactory way to render milk safe and yet not damage its nutritive properties is by its efficient pasteurisation. Local authorities anxious to protect the people for whose health they are responsible are now perceiving the desirability of enforcing adequate treatment of milk. Two of them—Glasgow and Poole—have now under consideration a scheme of obtaining powers to ensure efficient pasteurisation of the raw milk distributed within their areas, and in support of this movement their medical officers of health have issued illuminating and interesting reports. That coming from the public health department of the corporation of Glasgow² reviews the problem as it affects Glasgow. The daily liquid milk supply of Glasgow is said to be about 71,543 gallons. Of this 44.8 per cent is pasteurised under licence, 39.5 per cent is given uncontrolled pasteurisation (including a very little scalded or sterilised), 3.5 per cent is raw tuberculin tested milk while 12.2 per cent is consumed raw and ungraded. There are only 50 byres in the city, so practically all the milk comes from outside districts. Nearly all the milk (93 per cent) is distributed through the premises of wholesale or large retail tradesmen, and only about 2 per cent is sold by the producer distributor. On the cleanliness side the figures show that more than half of the raw milk sampled does not conform to a reasonable standard. Other facts in the report show that Glasgow is very well placed for an experiment in compulsory pasteurisation and a scheme could be operated with comparatively little difficulty. Since such a large proportion of the city milk supply passes through milk depôts, most of which are of considerable size, there are no inherent difficulties in requiring this milk to be efficiently pasteurised. The milk is heated by uncontrolled pasteurisation in practically all in such depôts and the plants could readily be converted into pasteurisation plants of approved type and working. The report also contains a fact-

¹ Twenty-third Annual Report of the General Board of Control for Scotland (Cmd. 5408). Edinburgh: H.M. Stationery Office, 1937. Pp. 45. 1s. 3d.

² A Review of the Milk Supply of Glasgow in relation to Pasteurisation. By I. McCracken, M.B., D.P.H., and A. Stewart.

detailed review of the facts as to diseases spread from contaminated milk and notes on pasteurisation methods and practice

In Poole compulsory pasteurisation powers are being asked for in a parliamentary Bill in the form of power to make by laws

The Corporation may make byelaws for prohibiting regulating or controlling the sale or supply or the exposure or keeping for sale or supply within the borough for human consumption or for use in the manufacture of products for human consumption of milk which has not been pasteurised and at all times securely protected against contamination in such manner as may be prescribed by the byelaws

Pasteurisation is defined in the same terms as in the Milk (Special Designations) Order 1930. The medical officer of health for Poole (Dr R. J. M. Horne) has also submitted a valuable report dealing

with the dangers of raw milk and the need for these powers to require pasteurisation. Such reports though they supply useful argument cannot in the space available review more than a small part of the overwhelming evidence available in favour of compulsory pasteurisation. Those interested will, however be able to consult many other sources including the authoritative report by the Committee on Cattle Diseases to the Economic Advisory Council and the several reports of the People's League of Health.

We welcome the efforts of the corporations of Glasgow and of Poole to carry out one of their primary functions the protection of their inhabitants from the risk of milk-spread infectious disease by seeking to secure powers requiring the efficient pasteurisation of the raw milk consumed within their areas.

OBITUARY

JOSEPH FAYRER Bt, C.B.E., M.D. F.R.C.S. Edin.

We regret to record the death of Lieut. Colonel Sir Joseph Fayrer which occurred in Gullane East Lothian on April 13th in his 79th year. He was the second son of Surgeon General Sir Joseph Fayrer, famous for his gallant service at the siege of Lucknow during the Indian Mutiny and author of the *Thakutphida of India*.

Joseph Fayrer was born in 1859 and educated at Rugby Trinity College Cambridge and St. George's Hospital where he commenced his medical studies. Later he went to the University of Edinburgh where he took the diploma of F.R.C.S. Edin. later graduating at St. Andrews as M.D. He went immediately into the R.A.M.C. entering in 1886 at the top of the list. He was stationed for a year at Edinburgh Castle and was then dispatched on foreign service, where following in the footsteps of his father he spent most of his time in India. His career there was that of an energetic officer and he became specially marked out for his administrative work in hospitals. On returning to England in 1894 he was appointed medical officer of the Royal Horse Guards a post which he held for three years. He then went to India for further service until 1903 when he returned to England as staff adviser and secretary to the P.M.O. of the London Military District. At the expiration of that post he became superintendent of the Duke of York's Military School then situated in Chelsea where his energetic and sympathetic activities gained him large credit. He held this post for five years when he went to China in charge of the Military Hospital Hong Kong. In 1907 he succeeded to the baronetcy and while in Hong Kong was appointed in 1911 superintendent of the Edinburgh Royal Infirmary a position which he held for 13 years a period covering the years of the war. During the war he was in command of the 2nd Scotch General Hospital Craigleith and was made a C.B.E. in 1919. He retired from the superintendency of the infirmary in 1923 on the age limit. Both at the infirmary and at Craigleith his charm of manner and capacity for friendship assisted him in a marked way in the discharge of his duties.

Sir Joseph Fayrer married Ella daughter of the late Colonel W. J. Mayhew and leaves a widow, two daughters and one son who succeeds to the title.

A lifelong friend writes: At Cambridge and at St. George's Hospital Fayrer collected friends and throughout a long and varied career he showed the

same power. He had an alert attractive appearance and a sympathetic manner the outcome not of a desire to please but of a willingness to be pleased. He was a game player and a sportsman when official duties gave him the opportunity. He always saw the best side of the other man and had a gift for friendship. His death will be regretted by very many.

ROBERT LYALL GUTHRIE, O.B.E. M.D. Edin.

Dr Robert Guthrie whose death occurred on April 13th was the son of the late James Guthrie Hope Park Broughty Ferry Forfarshire. He was qualified alike as doctor and barrister commencing with the medical profession a connexion on which he always insisted. He graduated in medicine at the University of Edinburgh as M.D. C.M. in 1892 and held several resident appointments. For a time he practised at Bethnal Green when he also studied law. He acted as deputy coroner to the late Dr. Wynn Westcott and in 1897 was called to the Bar at the Middle Temple. In 1903 he was deputy coroner for the Eastern District of the County of London the post which he was holding in 1914. During the war he was at the outbreak medical officer to the 7th London R.F.A. later he was commandant of the Fulham Military Hospital with the rank of brevet major and was then promoted lieutenant colonel and took command of the Belmont Prisoners of War Hospital. He was a successful administrator in all those posts and for his services received the O.B.E. After the war he resumed his duties as coroner and in 1921 became coroner to the Eastern District. As a coroner he was primarily a doctor and refused to be diverted from what he held to be his basic duty—namely to find accurately the cause of death. In his court one would frequently find cases being decided plainly and simply which were likely to have had far reaching consequences—cases of accidents at work in docks or factories where several parties were interested in the issues. In these circumstances his kindly attitude and his common sense decisions received wide appreciation—appreciation which led on one public occasion to Mr. George Lansbury referring to him as the ideal coroner. He was in addition a capable man of affairs was honorary treasurer of the London and Counties Medical Protection Society and medical adviser to the Law Union and Rock Insurance Company.

Dr Temple Clark writes: "Legal medicine has suffered a distinct loss in the passing of J. I. Guthrie."

There were united in him all the qualities which go to make the best type of coroner—an up to date knowledge of medicine, a sound grounding and grip of the law, and much shrewdness and tact in the conduct of an inquiry. Those who are not in close contact with coroners and their work can have no idea of the services rendered to the public by such men as Guthrie. Of failing health for some years past, one could not but admire the way he stuck grimly to his task to the end."

Dr Guthrie died at his home at Wimbledon in his 70th year.

CHARLES COLES, M.D. Lond

Dr Charles Coles died suddenly on April 15th at his home in St Margaret's road, Oxford, where he had lived in retirement for some years. He was the son of the late Mr J Coles of Uxbridge, and was educated at St Bartholomew's Hospital, where he distinguished himself as an athlete in football, cricket, and tennis. He filled there the offices of house physician and house surgeon, and was also house physician at the Brompton Hospital for Consumption. He held the Brackenbury scholarship at St Bartholomew's and graduated as M.B. Lond. in 1890. Two years later he took the M.D. degree, securing the gold medal, and later was awarded the gold medal when taking the M.D. degree in State medicine. For a short time he was in practice in Leicester but gave this up owing to temporary ill health, and entering the public health service was in 1899 appointed medical officer for the combined districts of Leicester shire and Rutland. In 1901 he was appointed medical officer for the Oxfordshire united sanitary districts and in 1911 county and school medical officer to the Oxfordshire county council. His work for the county council was never spectacular but was always sound. It was not an easy task for the demand for an increase in the scope of the public health services was difficult to satisfy from the resources of an agricultural area. In these matters he was always loyal to the county council while yet retaining the respect and regard of the medical profession.

Coles's leisure time was spent in gardening and in the study of the natural history of the country side, especially butterflies and birds. He had the "gardener's thumb," and plants flourished under his care, even in the poor soil of a north Oxford garden he made roses bloom to perfection. He would spend the greater part of the day after retirement in his garden, and his great delight was to point out to the occasional visitor the points of growth and development of the different varieties and how he had been able to produce the result. He had a small greenhouse and grew roses in pots for early blooms. He had also an extensive knowledge of field botany.

He was of a retiring habit and did not make many friends, but his friendship when given was real and lasting. He leaves a widow, a son, and a daughter.

JOHN TAYLOR, M.D., Ch.M. St. And

Much regret was felt at the announcement of the death on April 14th, at the age of 44, of Mr John Taylor, hon. surgeon in charge of the Orthopaedic Department, Dundee Royal Infirmary.

Mr Taylor, who had been in poor health for about two years, had been unable to carry on his practice for some months. He graduated M.B. Ch.B. in St Andrews University in July, 1914, and a month later went out to France before the majority of the Expeditionary Force had left this country. He was,

however, early invalided home and in 1916 appointed resident surgical officer in the Dues War Hospital. In 1917 he proceeded to the M.D. degree and again went abroad on service, on this occasion to Mesopotamia as surgical specialist. From this field of operation he was invalided, but later became senior medical officer in Bihar and Orissa. At the war he continued in association with the Territorial Force, in which he ultimately held the rank of colonel and was A.D.M.S. to the 51st (Highland) Division. He was specialist in tropical diseases in the Ministry of Pensions and surgeon to the Dundee orthopaedic annexe. When he rejoined the medical school he acted successively as assistant to a professor of pathology and lecturer in regional anatomy at University College, Dundee. He was appointed surgical tutor at Dundee Royal Infirmary in 1920, later assistant surgeon, and finally orthopaedic surgeon. On his resignation in 1935 on account of ill health he was appointed honorary consultant surgeon. He was a fellow of the Association of Surgeons, member of the Anatomical Society, and an associate member of the Orthopaedic Society of Great Britain. He gave much time to research and for ten years with Prof Weymouth Reid and Dr Shiven, carried on investigations into the function of the pancreas.

His death is regretted among all classes of the community in Dundee, he was known as an able surgeon and a generous hearted and kind friend.

DAVID SMART, M.B., Ch.M. Edin

Dr David Smart, who died suddenly on April 1st at Bootle, was medical referee to the Shipping Federation. A Scotsman born at Meigle, Perthshire, he was educated at Dundee High School and the University of Edinburgh, where he graduated as M.B., Ch.M., obtaining at the same time the Buchanan fellowship. He was for a period resident in charge of the gynaecological wards at the Edinburgh Post Infirmary and then went to Liverpool on appointment to the Smithdown Road Institution, becoming assistant surgeon to the Liverpool Hospital for Women and the Toxteth Poor Law Hospital. At the Liverpool Hospital for Women he met his wife, Dr Blanche Z. Smart, who was also a medical officer at the institution, and for many years they were in general practice in partnership. The war forced Dr David Smart well equipped. He had already given service to the old volunteers and when he came to Liverpool continued his association with the territorial army by joining the 6th Liverpool Rifles. He was associated with Dr Graham Martin in raising the Liverpool bearer company, whose members were later transferred to the 1st and 2nd Lancashire Field Ambulances. During the war he was Assistant Director of Medical Services to the 57th and 73rd Divisions, and retired with the rank of Col. A.M.S. (T). Dr Smart was highly respected and popular in the city of Liverpool and his death is a subject of general regret in the city and in the neighbourhood. The end was very sudden for he collapsed and died while conducting an examination of seamen at the Brocklebank dock.

NORMAN COLLUM PATRICK, M.R.C.S. Eng., D.P.H.

The death of Capt. Norman Collum Patrick, took place on March 24th in Belfast following a brief illness. As chief medical officer to the Ministry of Health Affairs of Northern Ireland, Capt. Patrick was an outstanding figure in the profession and was every

everywhere respected for the devotion with which he carried out his duties and for his kindly and sympathetic disposition. He was educated at Rossall and at Cambridge University and went for his medical training to St Bartholomew's Hospital. After his qualification he served as dispensary medical officer in the Glenties district of Co Antrim and subsequently was appointed tuberculosis officer for the county. At the outbreak of hostilities in 1914 he volunteered for active service and served through

out the greater part of the war as Captain R.A.M.C. attached to the 110th Field Ambulance 38th Ulster Division. After the war when the Northern Government was formed his professional ability was recognised by his appointment to the Ministry of Home Affairs and later in his rise to the rank of chief medical officer. His loss is deeply regretted by his associates at the Ministry and by many who found in him a loyal friend and a wise counsellor. He is survived by his wife and one daughter.

CORRESPONDENCE

POSTURAL DEFORMITIES OF THE ANTEROPosterIOR CURVES OF THE SPINE

To the Editor of THE LANCET

SIR.—The communication by Mr Philip Wiles published in your issue of April 17th comes at an opportune moment when a national policy to improve the physique of the people is being planned. Habitual use of the body with any real increase of the normal anteroposterior curves of the spine is undesirable. Mr Wiles states that voluntary control over the body movements that correct a postural deformity is easily taught when adequate mobility is present. In many cases however in view of the state of fatigue of the anti gravity muscles and the general lack of responsiveness it is not easy in my opinion to get these muscles to maintain an improved position. A period of reconstructive rest in bed for two or three weeks may be necessary as a preliminary to exercises. The mattress should be firm. The patient lies on his back with a low pillow beneath the head and knees at right angles and three times daily for half an hour after meals he lies on his thoracic spine is hyperextended by placing a firm pillow beneath it, the hands being clasped behind the head. This leaves the lumbar spine unsupported and exerts a slow corrective leverage upon the whole of the spine. It opens out the subcostal angle, and allows the patient to be instructed in correct breathing. The patient is then turned over to lie face downwards upon a pillow placed lengthwise beneath the trunk. Hot fomentations may be applied to the spine for 15 minutes, after which the patient resumes the first position described.

After ten days or so the improvement in the mobility of the spine and in the pliability of the muscles may be quite astonishing. Now is the time to begin spinal massage and instruction in a simple series of lying down postural remedial exercises designed chiefly to teach the patient how to flatten the lumbar spine and to contract the side abdominal muscles. Exercises in control are far easier to learn when lying down. It is now in order to allow the patient up for postural remedial training the object of which is to cause him to maintain an habitually improved attitude in standing sitting walking and breathing. As a useful temporary makeshift until the muscle sense of proper balance is restored, a slight spinal back brace to span the lumbar curve is often worn without it many quickly relapse into bad habits of poor posture and therefore no hesitation should be felt in prescribing its use.

The order of treatment then is reconstructive rest remedial training and support. The simplicity and lasting efficiency of these methods I have often proved in practice. They are not practised nearly enough. One hears a great deal about the active side of treatment such as massage exercises and so on and far too little in my view of the opposite or passive side which should precede and complete

the active side. Reconstructive, rehabilitating rest and support are just as important as exercises as a basis of restoration of correct use and function of the body. When the three weeks period of rest is over the patient should still for a considerable time have two half hour periods of hyperextension on the pillow daily. It is not a bad plan with slender physically delicate subjects to make a posterior moulded plaster of Paris shell in which the patient may lie at night or for part of the night. In aggravated cases it may be advisable to hyperextend the dorsal spine for a time upon an angled Bradford frame.

In the process of training it should constantly be remembered that in all body actions it is the head which leads in maintaining a proper static position. If the head is stretched up tall with the chin held in it causes the chest to be elevated and the diaphragm to work properly. It draws up the abdominal contents and gets the body forward on to the balls of the feet. The fixed elevated thorax thus assists in affording a strong basis of support for the action of the abdominal muscles. These muscles after all have to be allowed to assist the gluteal muscles in flattening the lumbar spine.—I am Sir yours faithfully

Edinburgh April 16th

W A COCHRANE

To the Editor of THE LANCET

SIR.—Your leading article last week on improvement of posture provided a valuable commentary on Mr Wiles' paper with an appreciation of the protagonist of correct posture—Goldthwait of Boston—not mentioned by Mr Wiles. The phrase "good body mechanics" first introduced by Goldthwait has helped me very much to crystallise the generally rather vague conceptions of what is to be gained by physical exercises. Since seeing the results of his theories applied in practice at the Robert Brigham Hospital in Boston I have taken the opportunity of studying and correcting the bad mechanics of incorrect posture at the Charterhouse Rheumatism Clinic. It is especially in rheumatoid arthritis and in spondylitis adolescents (Marie Strümpell syndrome) and even more so during the pre-spondylitic stage of bilateral sacro-iliitis, that the very simple postural exercises described by Goldthwait (1922-1934) have proved of immense benefit. I have adapted three for use all of which are performed lying on the back on the ground or other plane surface. As you yourself suggest this is the position which provides the necessary resistance to the flexors and support for the (weaker) extensors.

1 Hands behind head elbows pressed outward and down chest raised to the fullest extent. Breathe deeply 10-15 times without lowering the chest. According to Goldthwait and Loring Swaim this produces full diaphragmatic breathing empties the pleural cavity and enlarges the abdominal cavity by widening the subcostal angle.

2 When chest expansion is poor and the subcostal angle narrowed one hand is placed on top of the head

which is used as a fulcrum to pull on the ribs, first of one side, then of the other, as deep breaths are taken.

3 Hands to side, knees drawn up, the lumbar curve is straightened by using the glutei and "rolling up the pelvis" (as stressed by Mr Wiles). Maintaining this position, each leg in turn is straightened, lowered, and raised several times.

It is explained that these exercises are to encourage a correct posture to be maintained at all times. In Goldthwait's words "Stand tall, head up, chin in, chest high, abdomen flat, weight on balls of feet." These exercises take less than five minutes, and are far better than the usual "physical jerks" which occupy a long time, are extremely tedious, and are, I believe, of little value for the purpose of keeping fit.

I am, Sir, yours faithfully,

Harley street W., April 20th H WARREN CROWE

CYSTICERCOSIS AS A CAUSE OF EPILEPSY

To the Editor of THE LANCET

SIR,—In your issue of April 10th there is an account of an interesting and instructive case of cysticercosis (*T. solium*) which illustrates once more the importance of X ray examination of the limbs in the diagnosis of this condition, as calcification in cysticerci in the skull is not often seen. The statement, however, that "Morrison (1934) has described the only case where calcification of cysts in the brain associated with epileptic convulsions has been found" is incorrect. Dixon and Smithers (1934) collected all the cases of cysticercosis that they could trace as far back as 1892, and in 1935 published a fuller account of the condition in the *R.A.M.O. Journal*, in which they brought the total of cases up to 79 (46 of which had not previously been published). In this series of 79 cases 7 were found in which calcification in cysticerci could be demonstrated in skull radiographs. References to the original publication of these cases are given below.

Denny Brown's case was of particular interest in that it is, I believe, the only case on record in the English literature where calcified cysticerci were demonstrated in the radiographs of the skull but not elsewhere in the body.—I am, Sir, yours faithfully,

College-road, Dulwich S.E. April 14th D W SMITHERS

REFERENCES

- Roth E J H (1926) *Brit. med. J.* 2, 470
 Morrison W K (1934) *Ibid.* 1, 13
 Denny Brown D (1934) *Proc. R. Soc. Med.* 27, 667
 Behrman S (1934) *Ibid.* 27, 668
 Dixon H B F and Smithers, D W (1934) *Quart. J. Med.* 27, 603. Two of these cases were diagnosed by H Macdonald Critchley.

MEDICAL EDUCATION OF WOMEN

To the Editor of THE LANCET

SIR,—As long ago as 1934 THE LANCET mentioned that a proposal to establish a medical school for women at the West London Hospital was under consideration by the University of London. Dr Norah Schuster, in your issue dated April 17th, suggests that it might be of advantage to the West London Hospital to take women as students and she may be interested to know that the proposal is still having the careful consideration of the authorities both of the university and the hospital.

The creation of a new medical school is not an easy matter and it is no fault of either the university or the hospital that the women students of London, as also of Oxford and Cambridge, are still finding difficulties in getting vacancies in the London medical schools for the clinical period of training. This hospital can provide all the facilities necessary for clinical training and has been an active post graduate centre for over forty years. But we cannot accept

women students without the recognition of the universities for whose degrees they are studying. As far as the University of London is concerned I think I can say that this recognition is only being withheld until certain preliminary difficulties have been overcome. Every effort is being made to solve the numerous problems which are inherent in such a project, but the machinery of university government necessarily moves slowly and it is impossible as yet to give any indication as to the date upon which the change over from post graduate to undergraduate teaching will be made.

In the meantime this college continues to make its contribution to medical education as a post graduate school where increasing numbers of men and women from all parts of the Empire avail themselves of the excellent clinical material to be found in its wards and out patient clinics.

I am, Sir, yours faithfully,

MAURICE E SHAW,
 Dean, West London Post Graduate College,
 Hammersmith, London, W.

April 17th

OVER-TREATMENT OF GONORRHOEA

To the Editor of THE LANCET

SIR,—I should like to endorse the opinions expressed by Mr Nicholls in your issue of March 20th (p. 391) and by Dr Simpson (April 10th, p. 899) on the over-treatment of gonorrhoea.

A man of 26 who contracted gonorrhoea three years ago recently came under my care. He had been treated at a clinic for one year, by a doctor for another year, and by a second doctor for months. There was a little mucous discharge from gonococci but with many diphtheroids. The mucous surface of the anterior urethra was much scarred from treatment with Kollmann's dilator. He was suffering from a non gonorrhoeal urethritis due to prostatic calculi.

There is no more useful method of treatment than prostatic massage in the right cases and in the right amount, but much harm can be done both physically and psychologically if it is abused. If the patients are being overtreated the number of attendances at any one centre is unnecessarily increased. Should treatment be reduced to reasonable and proper proportions it might not be necessary to delegate massage of the prostate to the unskilled and sometimes rough hands of an orderly.

As regards women it is surely better for the woman with vaginal discharge to see a gynaecologist first than be sent by him to the V.D. department rather than as is customary at present, sent straight to the V.D. department to be sorted out. It is no doubt of great importance for the young gynaecologist to learn to operate skilfully but it is no less part of his vocation to diagnose and treat septic conditions of the cervix. The gratitude of many thousands of women is waiting to be earned by someone who can tackle this difficult subject.

I am, Sir, yours faithfully,

London W., April 15th

RICHARD ROPEL

LOCAL ANÆSTHETICS ON BLOOD-VESSELS

To the Editor of THE LANCET

SIR,—There is an inaccuracy which I would like to correct in your report (THE LANCET, March 24th, p. 756) of the discussion by the neurological section of the Royal Society of Medicine on the neuro sequelæ of spinal anaesthesia. Questions were asked by Dr Wilfred Harris and from the presidential chair about the vascular action of 5 per cent procaine solutions. Actually my reply was to the effect that while I used 10 per cent procaine

solutions intrathecally I had no experience of solutions stronger than 2 per cent in the skin and that such solutions in the absence of adrenaline coebefrin &c were vaso-dilator. The solutions used by my students in the practical classes are 0.1 per cent solutions of procaine and percaline with and without 0.001 per cent adrenaline.

As suggested by Dr Harris, I have since examined the effects of 5 per cent procaine (adrenaline free) both in and under my skin. Apart from the stretching of the epidermis by the solution no blanching is produced and considerable vaso dilatation follows. I have checked these observations on another subject and a dental friend assures me that similarly 5 per cent. procaine solution without adrenaline causes no vaso-contraction and only a brief anaesthesia when injected into the gum.

I am Sir yours faithfully

A. D. MACDONALD

Department of Pharmacology, The University
Manchester April 15th.

WHAT IS OSTEOPATHY?

To the Editor of THE LANCET

SIR.—Even the more vocal of the medical opponents of osteopathy are prepared to admit that certain conditions of strain or fixation which are often not demonstrable on X rays exist in the lumbar area. These joint conditions are sometimes accompanied by pain along the sciatic nerve or in the lumbar muscles. That a similar condition may exist in the cervical and upper thoracic areas and be accompanied by pain in the arm or shoulder has received attention in recent papers. It is equally an accepted fact that these conditions often yield to manipulation. Now the American trained osteopaths are exceedingly skilled in the quick specific movement of spinal joints, and because of constant practice and teaching their dexterity makes the efforts of the average orthopaedic surgeon look clumsy to a degree. Because of this dexterity the osteopath obtains much more satisfactory results in the long run with less discomfort to the patient and without having recourse to anaesthesia nearly so often.

It is accordingly submitted that even if all the other conditions which have benefited by osteopathic treatment are discounted the osteopaths have contributed something to the art of medicine and it behoves the medical profession to see that those among their members who set out to do manipulative work acquire a good pair of hands by practice and by taking every advantage of opportunities of seeing the work of experts at manipulation. It is just as foolhardy to entrust the manipulation of the cervical vertebrae to a general surgeon as it is to expect a radiologist to be able to perform a Wertheim hysterectomy.

I am Sir yours faithfully

W. HARGRAVE WILSON

Gloucester-place W April 19th

AMBULANCES AND STRETCHERS

To the Editor of THE LANCET

SIR.—The question of standardising the size of British ambulances is one which I think deserves consideration. At present ambulances may be divided generally into short and long. The short type (most civil ambulances) is capable of carrying only short stretchers—i.e. those with folding handles—while the long type is capable of carrying stretchers with fixed handles such as the Army and St John Ambulance stretcher. In times of national emergency it would be most desirable that all ambulances should be capable of carrying any type of stretcher; otherwise

during an air raid for example St John Ambulance men having collected a casualty might find that they could not load him straight into the ambulance which had driven up. Delay is undesirable on such occasions and on all occasions the less a badly injured man is shifted about the better.

As the vast majority of British stretchers to day are of the long type—Army Air Force St John Ambulance and so forth—it appears desirable to encourage the production of long ambulances only, which could be relied upon for the rapid collection of all casualties at home or abroad. It is understood that the London County Council have already moved in this matter and our latest naval ambulances are long. I feel sure that if this aspect of the matter was brought to the notice of firms concerned they would advise their patrons accordingly when future orders were being considered. And as other countries suffer from the same difficulty this should become a matter for international consideration for there can be no question of international rivalry here.

I am Sir yours faithfully

R. A. W. FORD,

April 17th

Surgeon-Commander Royal Navy

TREND OF THE POPULATION

To the Editor of THE LANCET

SIR.—Please allow me to make the following comments on the valuable article by Mr C. A. Gould on p. 944 of your last issue. (1) The population of England and Wales has indeed been aging since 1870 but let no one overlook that this was due to reduction in the mortality of the young. (2) Mr Gould says that the population will attain a maximum of 40,800,000 about the year 1944 yet the Registrar General takes it to be more than that already. (3) It is not a serious matter that trade should decline if the amount of it per inhabitant increases. (4) The splendid diagram usefully shows that on the worst estimate the workers will outnumber the children and aged for a century so Great Britain should continue to have a high standard of living although it may cease to be a dominating power. I may add that if our farms become larger they will more easily compete with the food from the sparsely peopled countries and if wages rise there will be an increasing demand for home-grown produce. Mr Gould ignores the possible effects of migration but a relatively high standard of living would draw from the Continent as many young workers as we might choose to admit.

I am Sir yours faithfully

Minor Fields Patney S.W. April 19th B. DUNLOP

PAGE NUMBERS ON REPRINTS

To the Editor of THE LANCET

SIR.—From time to time I am the fortunate recipient of reprints of papers which have appeared in various periodicals. May I call attention to a not uncommon fault in these reprints? It is the omission of the number of the first page of the article. I have before me a reprint from a well-known scientific publication. It gives the name of the journal, the number of the volume, the number of the issue and the date of publication but no page. In a country like this it is impossible always to get into touch with a library to supply the omission and in my editorial work I find the impossibility of inserting the page number a difficulty in carrying out properly the Harvard system of references.

I am Sir yours faithfully

JAMES H. SQUYER

Editor, East African Medical Journal,
Nairobi, Kenya March 27th

PARLIAMENTARY INTELLIGENCE

CORONERS AND THEIR DUTIES

In the House of Lords on April 15th Lord MORRIS said there was an increasing tendency among coroners to moralise and lecture at inquests over which they presided and he inquired whether steps could be taken to curb this undesirable disposition by legislation. Alternatively, he asked the Government if they would consider the abolition of the ancient office of coroner. In February, 1935, the then Home Secretary, in response to popular clamour, had appointed a Departmental Committee to inquire into the law and practice relating to coroners. In the course of its report it was stated —

The tendency of some coroners to animadvert upon the conduct of persons who have, perhaps quite incidentally, come under their notice has frequently been the subject of public comment. We consider that the practice should be brought to an end. We do not, however, propose any amendment of the law at present on this point. We believe that the body of our recommendations, taken as a whole, will tend to put a stop to this practice.

That pious hope unfortunately had never been fulfilled. The present Home Secretary had also quite recently expressed a similar hope that coroners would have some regard to the recommendations of that Committee. On the contrary, coroners had paid no attention whatever to those recommendations, but were getting worse. For example, a month or two ago the coroner at Greenwich had publicly rebuked a minister of religion and lectured him on his supposed duty. On March 23rd the coroner for Tunbridge Wells, inquiring into the death of a six-weeks' old child, told the mother *coram populo* this —

This child was starved to death, but I am prepared to believe that you thought you were doing the right thing. I am prepared to put your complete failure down to ignorance. You and your husband are both young, and I hope you make a better job of it next time.

Lord MORRIS suggested that that was a piece of intolerable impertinence. It was time that a stop was put to this kind of thing and that steps were taken, if necessary by legislation, to check this desire on the part of coroners to apportion moral responsibility, an act that had nothing to do with their proper function, which was solely to inquire into the cause of death. At Harrogate a short time ago the local coroner was inquiring into the death of a man. According to the *Yorkshire Post* the son of the dead man said "I would like to make it perfectly clear that my father was living a mode of life which he was not accustomed to." The coroner remarked to the son of the dead man "I know all about that. You have the gentlemen of the press here, and certain papers will thoroughly enjoy spreading your family troubles all over the country. If you will take my advice you will say nothing more." Lord MORRIS said he thought that a man who could so abuse his position as to make remarks of that kind was quite unfit to occupy the post of coroner and the sooner he was removed the better.

The coroner's court was admittedly very old in origin, it went back, he believed, to the thirteenth century, but that hardly seemed a reason why it should survive to day. There was now an efficient police force and the coroner served no useful purpose whatever. He was merely a nuisance and an expense, he cost the country, on an average, not less than £220,000 per annum which might be put to a better use. The only possible case where inquiry of this kind was called for was in suspected foul play, and these could well be left in the hands of the police. There was objection to that in some quarters on the ground that the police might be corrupt or negligent. He did not think that fear was well founded, but a coroner's inquest was certainly a very indifferent safeguard against that danger,

if it be a real one. Leaving out these cases they remained those of obvious suicide, motor accidents, and so forth. Deaths due to road accidents could very easily be investigated by the Ministry of Transport, and railway accidents could be inquired into—as indeed they were at present—by the coroners in question. In almost all cases of fatal accident to employed persons—taking the mining industry for an example—these inquiries were now carried out by experts, and the coroner's inquests did not throw any light on the matter at all. The coroner was nothing but a paid public Paul Pry and the whole thing was extremely un-English. The very expensive but undoubtedly interesting travesty last year when one of their Lordships was tried on a charge of manslaughter was due entirely to the fact that the noble Lord in question was committed for trial there on a coroner's warrant, and no magistrate would have committed the noble Lord at all, since there was not a tittle of real evidence against him. He was convinced that there was a growing and considerable volume of opinion in this country which favoured the complete abolition of the coroner and his inquest.

Lord SNELL said that the issue which Lord MORRIS had raised was not an unimportant one. They expected public officials in this country to do their duty according to their obligations to the State. It was true that very few of them could resist the temptation to advise another person when he was in trouble, but they did not appoint public coroners for that purpose. They had certain specific legal duties to perform and when those duties had been performed the coroners had done all that the nation expected of them. The very worst moralist in the world was the amateur moralist who knew practically nothing about it and he thought that Lord MORRIS had made the point that coroners should stick to the job for which they were appointed and leave the matters to the discretion of people whose knowledge upon them was superior to their own.

The MARQUESS OF DUFFERIN AND AVA, Lord-Waiting, said that Lord MORRIS had made so many accusations that it was difficult to keep track of them. For instance, he had said that the coroner's court was un-English. No habit or practice of this kind was called English until it had been sanctified by custom for many years, but the coroner's court went back to 1276, and he thought that the noble Lord would agree that this un-English custom had very small roots in our land. He did not want to quibble, but he must say on behalf of the Home Office that the words of Lord MORRIS's question were extremely misleading. So far as the Home Office were aware there was no increasing tendency on the part of coroners to moralise and lecture at the inquests on which they presided. The press and the public were very vigilant at the moment with regard to the way in which coroners exercised their responsibilities, and the Home Office would certainly have been aware if coroners had in fact tended to spread themselves more in the last few months than they had done in the past. Lord MORRIS had really only argued from the cases which had come to his notice in the public press and, of course, the only cases which had come to his notice were cases where coroners had exceeded their responsibilities. He had given credit at all for the number of inquests, tens of thousands of them, that were held in this country in which the coroner had acted properly and rightly. There were 3500 inquests held in London alone every year. Lord MORRIS. What a waste of time. The MARQUESS OF DUFFERIN and AVA said it might be a waste of time, but so far as he knew during the last year no complaint of any coroner's conduct at any of these inquests had been made. At the same time it was not for him to deny that on occasions the privilege of the Coroner's Court of Record might be abused. There was, of course, a grave danger, and

it was all the graver because sometimes these lectures and moralisations were directed at people or at institutions who were not able to answer back and might not even be present in the court or not represented by people qualified to deal with the intricacies of the law. He need hardly say that the Home Office took the very gravest view of that sort of attack. The Home Secretary recently in the House of Commons had used what seemed to him rather hard words. They made it quite clear that in the view of the Government spitting on the grave of the departed did very little good. The grave could take care of its own, but the living must be considered. In the view of the Government and of course, of Lord Wright's Committee a living man had just as much right to have his reputation protected as his liberty and it was just as wrong to take away a man's reputation without due process of law as it was to take away his liberty. That point was the occasion of a circular issued by the Home Office in 1927 to all coroners in which the Home Secretary made it clear that as he had been pressed to make a rule on the subject

He may say that where it is possible to secure the attendance of a person whose conduct appears to be in question it is desirable that his presence should be secured before censure is passed and that he should be afforded a reasonable opportunity of making any relevant explanation. It need hardly be added that there is special need for care before publicly making adverse comments if the person concerned is likely to suffer thereby in his profession or calling.

That circular was followed by the recommendations of Lord Wright's Committee which were naturally brought to the notice of coroners and he firmly believed that the mere publication of the Committee's report had done much to curb the habit to which Lord Morris objected. The Committee expressly added that on this particular point no legislation was required. They expected that the legislation that might follow from their report in regard to the Disciplinary Committee and the Rules Committee would be sufficient to attain their object. Lord Dufferin assured Lord Morris that although the programme of legislation was very full and he could not possibly offer any concrete promise at the same time when opportunity offered the suggestions of that Committee would probably be the subject of future legislation. When that happened he was perfectly certain that all the evils of which the noble Lord had complained would be done away with. The Government agreed with his noble friend in this so far as they deprecated coroners going outside their proper function. At the same time with the Wright Committee which was very definite on this point, they could not possibly contemplate the abolition of this ancient office.

DEFECTIVES AND VOLUNTARY STERILISATION

On April 18th on the motion that the Speaker do leave the chair on the House of Commons going into Committee of Supply on the Civil Estimates (Wing-Commander JAMES moved the following amendment—

In the opinion of this House the Government should give further consideration to the potentialities of voluntary sterilisation for hereditary defectives in accordance with the unanimous recommendations of the Departmental Committee that reported to the Ministry of Health on Jan 8th 1934.

He quoted a paragraph from the report of the Committee on Scottish Health Services which he said was a very strong body and the most recent health committee to report. It said: "In considering what measures should be taken to improve the health of the people we have to take into account at the outset the question of heredity. Physical and mental capacity has a basis in inheritance and some people therefore because of their hereditary constitu-

tion will be less fit, physically and mentally than others no matter what is done by way of medical care and improvement of environmental and other conditions. He (Wing-Commander James) invited the Minister of Health to give his attention to the need for further research into the problem of genetics. The fact that the amendment was not completely in agreement with the recommendations of the Brock Report was not because he disagreed with any of them, or would depart in any respect from them, but was merely a matter of technical form. Mental deficiency which covered the largest number of people concerned had generally in varying degrees a basis in heredity. In the Colchester inquiry it was shown that heredity played the greater part or the lesser part in the predisposition to mental deficiency in approximately 91 per cent of the cases examined. In addition to mental deficiency there were other forms of hereditary disability notably some forms of blindness which was much more directly hereditary even than the average form of mental deficiency. Most of the opposition to the idea of sterilisation came from people who had not read the report of the Brock Committee. That committee agreed with the Wood Committee, which published a report in 1920 that there were in England and Wales about 300,000 defectives and they gave it as their opinion that of that number approximately 200,000 were fit for community life, their degree of deficiency or defect not being high enough to justify their being retained in any form of institution. At present a very much smaller proportion than one-third was in fact in institutions or under care.

On Jan 1st 1936 the London County Council published a report containing the statement that the London County Council Hospitals Committee was responsible for the care of 27,730 persons of both sexes. In an earlier report they stated that 30,000 beds were occupied by deficiency cases. They stated further in the 1930 report, that since 1920 there had been an average annual increase of 803 and that during the next few years they anticipated a net annual average increase of 560 in the number of persons for whom accommodation would have to be provided. The increase recently was partly due to the growth of population of the London County Council area. The expenditure on such cases by the London County Council during the last financial year was £1,808,933. There was an enormous total expenditure in connexion with this problem. He did not suggest that if sterilisation were legalised it would be an economy. In the long run that might be achieved; but it was not from the point of view of economy that the Brock Committee recommended sterilisation or that anyone else should consider the problem. If sterilisation were legalised the immediate effect would be small. But if any part of the present enormous expenditure could be diverted to other channels and social services the community as a whole would benefit. The Central Association for Mental Welfare actively supported the suggestion that sterilisation should be legalised. A point in opposition to this proposal was that the existence in the community of persons who had been sterilised would lead to a lowering of the standard of morality. That point was examined and answered by the Brock Committee. There was still a great deal of misunderstanding about the nature of the sterilising operation. Any doctors who might be present that day would confirm the statement that the operation was very simple. In males it was trivial and wholly unattended by risk and in females it was virtually unattended by risk. It had no effect whatever on the normal ordinary life and health and capacity of the individual. It had nothing in common with any of the operations used for the removal of any gland. It in no way affected sex life or sexual secretions. The only effect was that the sexual act when performed did not result in fertilisation. Another argument frequently used against the recommendation of the committee that sterilisation should be legalised was that a mentally defective

person cannot have full volition. That argument, again, was dealt with extensively in the report. Sexual sterilisation to-day for health reasons as opposed to eugenic sterilisation was perfectly legal. Every year hundreds of people in this country had such operations performed either by private practitioners or in general hospitals for reasons of their own health. Most frequently this occurred with women likely to be endangered by child-bearing. But it was illegal for a person to be sterilised in the interests of posterity—or it was probably illegal, because it was not settled as a matter of case law or statute law.

Of the 300,000 defectives estimated to be in England and Wales, 200,000 at least conducted their lives in the ordinary way as members of the community and for all other purposes save this were held to have volition. Then there were people who had hereditary disabilities. Was it to be said that they had not complete volition? There were also carriers, themselves sound, whose progeny might well suffer from some congenital trouble. There was one point by which the Brock Committee was very much impressed—the position of the unfortunate normal child of a defective parent. It was perhaps one of the most telling arguments in favour of sterilisation.

One of the obstacles to this desirable reform arose from the opposition of the Roman Catholic Church. Fifteen years ago the whole question of sterilisation was brushed aside as so improper, so unthinkable, and so impracticable as to be unworthy of argument. Public opinion had moved a long way since then, and with it that great Church, which for generations had moulded and directed so much of human thought but which, he believed, had never in the long run stood across the path of progress, had modified its position. There was no reason why, if the Papal authorities decided to do so, they should not with perfect consistency change their attitude on the subject. It was a matter of discipline only and not of dogma. Since no responsible authority in this country had ever advocated sterilisation being anything but voluntary, and since, therefore, there was no possible suggestion that it could be inflicted on anyone, why should the Roman Catholic Church deny to those who were not Roman Catholics a form of relief which they desired? There had been much less opposition to the idea in the country than was supposed, and particularly among the poorer classes, who were the people who suffered most from the proximity of defectives and comprised the class which could not afford the use of nursing homes, there was a fervent demand for the legislation of sterilisation. The present position was class legislation. Those who were well off could get themselves sterilised if they wanted to, and those who are not well off cannot do so.

Some of the more important bodies which had recently signified their support of the principle of voluntary sterilisation included the Royal College of Physicians, the Royal College of Surgeons, the Society of Medical Officers of Health, the Mental Hospitals Association, the Women's Public Health Officers' Association, the County Councils Association, the Association of Municipal Corporations, and many others. He hoped that the Minister of Health would be able to give some statement on what was being done about the research recommended by the Brock Committee and incidentally by other bodies, such as the Departmental Committee on Scottish Health Services of 1930. There were now many countries abroad which had on their statute books and in practice sterilisation laws. Those countries included Germany, the Scandinavian countries and some British Dominions. Those who advocated voluntary sterilisation did not for a moment suggest that it was going to be a universal panacea or a substitute for other efforts. All they said was that for those who wanted it administered under adequate safeguards such as were recommended by the Brock Committee it would be a most important and very necessary weapon in the armoury of preventive medicine.

SIR FRANCIS ACLAND, in seconding the amendment, said that the more he had studied the question the more convinced he had become that something ought to be done without too long a delay. He emphasised a point implicit in the whole campaign for voluntary sterilisation on the lines of the Brock Report, namely, that this campaign was not, as it had been represented to be, the thin end of the wedge towards compulsory sterilisation. It was the very reverse and antithesis of the whole idea of anything compulsory. The proposal was not that anyone should go and get himself or herself sterilised, but that there must be very careful inquiry and certification by two doctors, who were both specially approved for the purpose, with an expert Ministry of Health committee in the background in case the Ministry's advisers were not satisfied with the medical report and certificates. That had this importance that three out of four classes who would be entitled to apply for voluntary sterilisation under the Brock Report, the certificates could only be given if the practitioner were satisfied that the person applying was suffering or had suffered, from disability or disorder deemed to be inheritable, or was a person deemed to be likely to transmit defectiveness or disorder of great disability to a subsequent generation. It was a really honest opinion with regard to that could be formed unless the practitioners concerned had access to the family histories of both of the generations and of the collaterals of the person concerned. No one would give information if it was any possibility that a person might be sent out and compulsorily sterilised. Therefore the whole machinery on which voluntary sterilisation rested which depended on the care and conscientiousness and thoroughness of these reports, would be brought to naught immediately any system of compulsory sterilisation was introduced.

Mr LOGAN said that the teaching of the Church was that man was made to multiply, and there was no getting away from that special ordinance. If a measure could not be applied unless it was compulsory. It was a very bad thing for medical men to advocate sterilisation in view of the advances in science, and he suggested that they would be doing better to give attention to raising the standard of life for the worker.

Captain GUNSTON said that the Brock Committee reported that "The children of parents one or both of whom are mentally defective are, on the average, below the normal, and our inquiry shows that more than one third of such children as survive are likely to be defective, and more than two fifths must be expected to exhibit some degree of abnormality." In the face of evidence like that, it could not be said that they ought not to take measure to reduce the number of mental defectives born into the world.

Mr PRITT said that this was a very fundamental step to propose and further research was really a proper course. He understood that on the whole the results so far in the United States where voluntary sterilisation had been seriously applied had been little disappointing from a statistical point of view. The results in Germany really ought to be ruled out entirely, because they had not been going very well, and were obviously administered with such motives and such reckless disregard of decency that it would not be fair even to use them as an illustration of the abuses that might result in a civilised country.

SIR KINGSLEY WOOD, Minister of Health, said that an allegation had been made that there had been an increase in the number of defectives in this country. Of course it should be borne in mind that the number of defectives under care increased as the general population increased, and as the local authorities became more efficient in ascertaining the existence of defectives, but it could be said with authority that there was no proof that the incidence of mental deficiency in this country was rising. Reference had also been made to what had been done by other countries and he assured the House that, of course,

his Department and the Board of Control kept them selves fully informed of the progress made under foreign statutes. But it could be said with accuracy and truth that at any rate up to the present time no results of significance could yet be assessed. For instance a system of voluntary sterilisation was approved in Norway and also in Sweden in 1935. Germany brought in a compulsory system of sterilisation in 1933. Although Denmark began a system, as regards a limited class in 1929 again no useful lessons could be learned from it. Members would appreciate the importance apart from the merits of the case of taking public opinion wholly with them. Sterilisation laws were in operation in several of the United States but in some little use had been made of them. In certain cases the law appeared to have been enacted without any money being provided to work them but the real explanation of failure in other cases was probably that the enthusiasm of small groups secured the passage of legislation for which there was no general demand and no sufficient backing of public opinion.

Observations had been made in the debate which would lead one to think that perhaps in certain cases the treatment of people who unhappily suffered from this terrible disease was, to quote one expression used, very horrible. He would like anyone who came across a case of that kind to give information at once. He shared the view of a good many people of what a terrible tragedy it was and what it must mean to people concerned. But he must testify to the increasing provision care, forethought and kindness displayed in these institutions. He would not like it to go out that there was anything else but the utmost consideration shown and large sums of money spent to see that reasonable care and treatment were given. Undoubtedly a great deal had been done. For instance only in 1934 in consultation with the Board of Control the Medical Research Council appointed a new committee to advise and assist them in promoting research into mental disorders. Another committee of equal importance had also been appointed by the Medical Research Council a committee on human genetics because in spite of the advances made in the biological study of heredity and the application of the results it was felt that the study of human genetics had been relatively neglected. Under theegis of this latter committee some very interesting researches were now taking place at the Royal Eastern Counties Institution at Colchester by Dr Penrose and his colleagues and an important examination of the hereditary characteristics in the blood of mental defectives and their families was now being made by Prof Fisher and Dr Taylor of the Galton Laboratory University College London. This work was being assisted by grants from the Rockefeller Foundation. Dr Slater at the Maudsley Hospital London was also working on a large-scale field of inquiry into certain different types of mental disorder. Other work was also being carried on so that it would be seen that this aspect of the question was not being neglected by the Government.

Wing-Commander JAMES asked if the Minister could give an assurance that any funds needed for research would also be forthcoming from the Government?

Sir KINGSLEY WOOD said that would be a very bold undertaking to give without consultation with the Chancellor of the Exchequer but if a question of money arose which he (Sir K. Wood) thought was important he would not hesitate to take it to the Chancellor of the Exchequer. He could say from his knowledge of many years now in connexion with health work that there was no doubt that opinion was growing in favour of sterilisation. When he came back to the Ministry after an absence of some time he saw the record of a deputation from the County Councils Association and the Association of Municipal Corporations in 1935. They represented a large body of people discharging responsible duties in a wide field of public and social work. It would have astonished a great many people if such a deputation had taken place

only two or three years before. But he could not disguise the fact that opposition still remained and there was much conflict of opinion particularly on religious grounds. The medical profession were by no means unanimous on the matter. If one asked even the medical men that one knew in one's private circle there was not a great deal of unanimity of opinion. Resolutions of certain learned colleges had been quoted but he very much questioned whether one would get anything like unanimity from the British Medical Association.

Mr THURTELL asked if it was not a fact that on most matters one could not get unanimity in the medical profession.

Sir KINGSLEY WOOD said there were always small minorities and one dealt with them as best one could but there would be found, he thought in the British Medical Association, a pretty steady and strong view on most medical matters of the day. He was endeavouring to put fairly the other side of the matter and he doubted very much whether they would get such a strong vote as would justify a Bill being promoted at this moment. It was desirable that ample time should be given for consideration and to get public opinion developed as he believed it was developing.

Wing-Commander JAMES withdrew his amendment.

NUTRITION: NEW GOVERNMENT SURVEYS

On April 13th in the House of Commons Mr ROWSON said that there could be no doubt that there were many people in this country suffering from a shortage of essential foodstuffs. The case was proved and accepted that large numbers of people were suffering from malnutrition. The Ministry of Health was certainly the best department through which they could act if they desired to improve conditions among the people. They should extend as far as possible the drinking of milk and also give advice on the right kinds of foodstuffs. He would like to see through the health committees of the local authorities a more widespread use of the valuable food that was produced and if necessary free distribution among the child population. The Minister of Health should do something with a view to organising the better feeding of children in the schools. He hoped the Minister and all Members of the House would recognise that this was a problem which must be faced. There was intense suffering all over the country and they ought to do their best to remedy this terrible evil among the people.

Sir KINGSLEY WOOD said he welcomed this discussion because it came at an opportune moment and he seized the opportunity to call the attention of Members to the publication of the first report of the Advisory Committee on Nutrition of the Ministry of Health. That was the most valuable document on nutrition that they had had up to the present time, and there could be no question as to the authority of the committee and its report was unanimous. It served a very useful purpose at present in that during the last year or two the question of nutrition had not only been a subject of much discussion but one on which all sorts of confusing statements had been made about the condition of the nation. The committee said that a great deal of further information on the facts must be obtained before they could reach a final national policy on nutrition. The report was particularly valuable in that it pointed out a number of ways along which they could make many advances. But while nutrition was an important side it was only one side of our national health problem. A man did not live by calories alone; the national health did not depend only on vitamins, but on a steady pursuit of many objectives such as better housing, the clearance of slums, maternity and child welfare, the provision of more open spaces and physical recreation. To-day no word was more often used and abused than malnutrition. Members should read Dr McGonigle's book in which he gave a very fair description of what malnutrition really meant.

On their broad survey, the Advisory Committee had come to the conclusion that the consumption per head of most foodstuffs had increased since the war, and the weakest thing to which they could point in connexion with the national dietary was the consumption of milk which is on a very low level in this country. The consumption per head had slightly declined since before the late war. Milk was the most complete food known and that there was no single step which would do more to improve the health and the resistance to disease of the rising generation than a largely increased consumption of safe milk by mothers, children, and adolescents. They found that, on the average of the years 1934 and 1935 all except a relatively small part of the population were obtaining the full amount of calories which they required. The national diet also contained enough protein, provided the consumption of animal protein increased, while that of vegetable protein remained nearly constant, as the standard of living rose with income. Sir Kingsley had asked each local authority to review at an early date its arrangements under the Maternity and Child Welfare Acts for the supply of milk and other foods, in view of the importance of securing that the diet of expectant and nursing mothers should contain the proper constituents and that the consumption of milk, especially by young people, should be increased. Practically all local authorities had already made some arrangements for the supply of milk, and many also for the supply of other foods, but it was essential that this important matter should be adequately dealt with throughout the country.

He had also drawn the attention of the authorities to the fact that there was to be no question of the limitations. He had told the authorities that he did not think it desirable to adopt any such restriction, for instance, as limiting the supply of milk to the last two or three months of pregnancy only, or only to children up to the age of 18 months or 2 years, or in every case to a pint per day. It was also very important that the scales of income should not be framed so as to render it difficult for any mother to take advantage of the authority's arrangements. Wherever possible efficiently pasteurised milk should be provided, and that where this was not practicable the medical officer of health should approve of the source and quality of the supply. He had also asked the authorities to consider afresh the question of a properly organised system of meals.

In some areas local authorities had hesitated on grounds of financial stringency to develop these services as fully as they desired to do, but the additional financial assistance afforded by the recently passed Local Government (Financial Provisions) Act provided a further reason for an early review by the authority of existing arrangements. The block grants to local authorities had just been raised by £5,000,000 to nearly £50,000,000 a year and at any rate the rearranged distribution gave a larger share to the authorities whose need was greatest. Therefore, he considered that many of them would be able to continue and extend the work which they were doing in the direction indicated by the Advisory Committee.

The Advisory Committee had asked for certain further information before they issue their next report. The Minister of Labour was shortly to undertake a family budget inquiry to provide the material required for a revision of the basis of the cost of living index. This was going to be incorporated in the Ministry of Labour cost-of-living inquiry which would involve the collection of budgets from 10,000 families for one week, and from the large proportion of those families for three other weeks, and also supplementary budgets of personal expenditure from wage-earning members of the families. They thus hoped to be able to obtain the further information asked for by the Advisory Committee. They also proposed to make certain dietary studies which were

recommended by the Advisory Committee, some of which would naturally take a considerable time.

Mr E J WILLIAMS said that Dr Somers Hastings, speaking recently of the inspection of children under the school medical service, had said that six minutes was taken to examine a school child, and he had complained that it was quite impossible to find out the flaws in a child's health in six minutes. Mr Williams asked the Minister whether something could not be done to give more accurate information as to school-children's state of health than we had at present. He hoped what Dr Hastings had said would be examined by the Department, to see whether it was possible to find out the actual physical state of a child in six minutes, including the time in which a report had to be written on the child's condition. Yet the figures presented in reports on the condition of school-children in this country were dependent on such scanty examination as that. They did not really know the physical state of school-children, and with such inadequate medical examinations they could not hope to know it. The Minister should insist that the school medical service was treated in a more scientific way than existed to-day.

Mr A. V. ALEXANDER said that the policy which the Government had adopted was not touching the problem. The Minister seemed to take pride in the fact that there was to be a further inquiry into family budgets. In the inquiries at Sheffield, Liverpool, Manchester, Salford, and that of the British Medical Association, they had an abundance of material available about what dietaries cost the householder for the Government to take any necessary action if they liked. It was simply a long-drawn-out process of appointing inquiry after inquiry instead of doing what was essential, enabling the people concerned in one form or another, either by improved wages, or by increased assistance or by adequate scales for those who had recourse to public assistance to be able at least to purchase the minimum standard of food required to set up a proper basis of nutrition. There was sufficient evidence already to show that the increased cost of basic dietaries to-day was so great as to justify the special attention of the Government to the income of the families which had to obtain their food.

Mr R. S. HUDSON, Parliamentary Secretary to the Ministry of Health, replying to the statement that the results of an examination of school children could not be of very great value because the time taken for the examination was only six minutes, said obviously it was impossible to have a proper examination in that time, said he was told that in fact the time taken for the examination was not six minutes and that the examination of some of the children took a longer time and that of others less time, the average being six minutes, which was adequate for the purpose. It was absurd for Mr Alexander to say that as a result of something the Government had done the people in this country were seriously prejudiced in obtaining adequate food. In some of the reports of Lancashire medical officers of health dealing with the health of school-children in Lancashire, one of the most reassuring things which emerged was that even in the boroughs in Lancashire where in view of the long-continued distress which many of these boroughs had suffered one would have expected to find high rates of malnutrition and starvation among school-children, actually one did not find that. Anyone who knew Lancashire would know of the great amount of unemployment and suffering which St Helens had gone through recent years. The medical officer of health for St Helens reported last year—and there was a question here of averages—that out of a total school population of 5797 who were examined he only found eight individual school-children suffering from malnutrition.

The motion that the Speaker do leave the chair was carried by 161 votes to 120.

FACTORIES BILL IN COMMITTEE

THE Factories Bill was further considered by a Standing Committee of the House of Commons on April 18th. Major LLOYD GEORGE was in the chair.

On Clause 85 which deals with the procedure at inquests in the case of death by accident or industrial disease in a factory.

Mr MANDER urged that where a coroner directed a post-mortem examination of the body of any person whose death might have been caused by accident or disease the various interested parties should be entitled to be represented by a medical practitioner. He said that there was considerable anxiety on this point and it was the subject of a recommendation in the report on the question of coroners. Mr SILVERMAN said he had had professional experience very recently of a case which threw a great deal of light on the point raised by Mr Mander. A man who had contracted silicosis was granted a workman's compensation award on the basis of total incapacity under the silicosis scheme. After a considerable time the man died and prior to the inquest there was a post-mortem examination conducted by the surgeon who had been requested to act by the coroner. The surgeon's evidence was that the man had died from silicosis and a verdict was returned to that effect. He (Mr Silverman) understood that at the post-mortem portions of the lung were detached and sent as was the custom to the Silicosis Board and some little time afterwards there was a decision by the Board that the man had not died from silicosis but from tuberculosis accompanied by silicosis. Therefore no compensation to the widow was payable. From the decisions of the Board there was no appeal. If Mr Mander's suggestion was agreed to in such cases the widow would be represented at the post-mortem and the inquest Mr LLOYD Under Secretary Home Office said that it seemed undesirable to deal with the post-mortem procedure in this Bill. The Coroners Committee made various recommendations on the subject which ought to be considered as a whole. It was suggested therefore that this matter should be left to be dealt with by further legislation when it could be looked at as a whole and in perspective.

The clause was ordered to stand part of the Bill. On Clause 87 (Duty of examining surgeon to investigate and report in certain cases).

Mr LLOYD, replying to questions in regard to this clause, said the surgeons were designated examining surgeons instead of certifying surgeons. He would look into examining surgeons. He would look into the matter in consultation with his advisers at the Home Office before the report stage.

The clause was ordered to stand part of the Bill. On Clause 88 which provides among other things that subject to certain exceptions the total hours worked by women and young persons in factories, exclusive of intervals for meals and rest shall not exceed nine in any day or 48 in any week; that the period of employment shall not exceed 11 hours in any day and shall not begin earlier than six o'clock in the morning or end later than eight o'clock in the evening or on Saturday one o'clock in the afternoon; and that where women and young persons are not employed on more than five days in the week the total hours worked may extend to ten and the period of employment may extend to twelve hours in any day.

Mr RIDLEY moved an amendment providing that it should not be lawful to employ a young person under the age of 15 in a factory. He said that doctors objected to the Clause as it stood because by it sleep was denied and educationists did not want it because it education was denied. No one wanted the Clause except the bad employer.

Mr DIXON said that to the general proposition that a young person below the age of 15 still growing and developing should not become part of a machine

and work long hours still required under this Bill he thought the whole Committee could almost unanimously agree. But there was a real difficulty here. The new Education Act did not come into force until 1939 and therefore there would be a years gap. While there was nothing to prevent the children staying at school during that interval they had to face the fact that they would leave school in large numbers and if this amendment were passed they would be prevented from getting into the best available occupations at that age. He agreed that they should strive for the time when children would be kept at school and not be allowed to go out into the labour market so early but while they were on the labour market it would be a mistake to decline to let them enter what were frequently some of the best occupations.

After further debate

Sir JOHN SIMON Home Secretary said that the Committee had now reached one of the really important parts of the Bill. He had taken the view from the beginning that in some respects the measure called for a change of drafting. Clause 145 (which deals with general interpretation) as the Bill stood stated: "Young person" means "a person who has attained the age of fourteen but has not attained the age of eighteen." They had to remember that Parliament had passed a new Education Act and the Factories Bill must be drafted in a form which fitted the Education Act. Therefore the Government had put down an amendment to add to Clause 145 the following:—

"But does not include any person whose parent is required under or by virtue of the Education Acts 1921 to 1936 to cause him (unless there is some reasonable excuse) to attend school or to attend an alternative course within the meaning of the Education Act 1936."

That he thought was the proper way in which to ensure that the provisions of the Education Act should be consistent with the factory law. Since the Factories Bill was introduced the Committee on Unregulated Occupations had reported and it dealt with various classes of young persons including van boys and others employed in connexion with factories. The Committee recommended that there should be regulation of the hours of work for young persons employed in connexion with factories, docks and warehouses. It further suggested that it might be possible to introduce that into the present Factories Bill. As far as he (Sir J. Simon) could see it ought to be possible to do that and if so it would stop an important gap. He was sorry that in the circumstances he could not offer to do more in this matter than he had said.

Sir ERNEST GRAHAM LITTLE said that there was one very important argument that had not been used and that was in connexion with the diminution in the number of children in the country. The capital which the child population represented was the most important capital that a nation could possess. Let them make sure that they did the very best for that capital which was possible. If they were going to deprive children of adding to their education it would be uneconomical and foolish.

The amendment was still under discussion when the Committee adjourned.

Debate on the amendment was resumed when the Committee met on April 15th.

Replying to a number of speeches

Mr LLOYD said that there was no justification for saying that in no circumstances could it be regarded as beneficial for juveniles between 14 and 15 to go into factory employment. The Board of Education had undertaken that in a circular which they were issuing to local authorities they would draw special attention to the importance of the permanence of employment being regarded as one of the considerations to be borne in mind in determining whether the employment was beneficial or not. The proposal in the amendment would completely hamstring the arrangements made under the new

Education Act. It was not a practical proposal in the interests of the juveniles and it cast an unjustifiable slur on factory employment as such.

After further discussion the amendment was negatived by 32 votes to 22.

Mr RIDLEY moved an amendment to the same clause to make its provisions apply to all workers in factories.

Sir J SIMON, in opposing the amendment, said it was a novel proposal. It was a suggestion to establish by law, for the first time in this country, the maximum number of hours to be worked by a grown man in a factory. In the past there had been collective bargaining between the trade unions and the employers and the law had only limited the hours of work in relation to certain classes of people because it was thought that they were in special need of protection.

After a long debate the amendment was negatived by 29 votes to 16.

The Committee adjourned.

HOURS OF EMPLOYMENT IN HOSPITALS

ON April 14th in the House of Commons Mr KIRBY asked leave to bring in a Bill to provide for the limitation of hours of work for persons employed in or in connexion with hospitals and institutions under the control of local authorities. He pointed out that the measure did not apply in any way to voluntary hospitals or institutions of that character. He and his friends would desire that it should cover those voluntary institutions as well but they realised the difficulties that a Bill of this sort might bring to them and therefore they were deliberately excluded. The Bill provided for a working week of 48 hours for the outdoor staffs and in the event of urgency or emergency those hours might be exceeded, providing that overtime was paid at the usual scales as provided for in agreements between employers and workpeople. So far as the indoor staffs were concerned the Bill provided for 96 hours' work in each fortnight with the same provisions for overtime as applied to the ordinary outdoor staffs. He thought it would be generally agreed that so far as the nursing and other indoor staffs were concerned it was desirable that not too strict a line should be laid down in order that the emergencies of the nursing services should be provided for if necessary. With a 96 hours' fortnight instead of a 48-hours' week there would be a much wider scope for the indoor staff in their various duties and shifts than if it was confined to a 48 hours' week. He believed that provision would be a special boon to the smaller institutions and hospitals where they had a very small number of personnel to deal with. The other provision of the Bill was that every worker whether employed on the indoor or outdoor staff should have a rest day in every week—a full 24 hours off duty for every calendar week worked.

The conditions in hospitals and institutions of a similar character had been widely investigated during the past two years and those investigations showed that there was chaos generally in the management, which required rationalising and regularising in a great number of ways and particularly in regard to hours. At the present moment those people who worked outside these institutions—motormen and ambulance attendants—by reason of the fact that they were in a trade union enjoyed better hours and conditions of labour than many of the nursing staff employed inside and he was particularly anxious that so far as the inside staffs were concerned this Bill should become law very soon. He would give the House two quotations from letters he had received relating particularly to the conditions of the nursing staffs in hospitals and institutions. The first letter came from a national organisation of a responsible trade union catering for this class of worker. He said—

'Owing to the long hours, which are aggravated particularly by split duties, or spread-over system, a number of authorities are finding it almost impossible to

recruit adequate nursing staffs for their hospitals. In most recent case I know of in this connexion is that of the — county council, whose chief officer reported that it was unable to recruit the necessary number of nurses to staff their hospitals and institutions, and that in fact at the present time they are short staffed.'

The other quotation was from a lady member of a local authority. She said—

'The facts are that great difficulty is being experienced at the moment throughout the country in inducing women to enter institutional life owing to the prevailing conditions. With regard to the nurses a very acute shortage of entrants to the profession is being experienced especially by municipal hospitals. It would be true to say that a serious epidemic occurred in London or in one of the large provincial towns there would not be a sufficient staff to man the hospitals. The reasons given for this are long hours of duty spread over insufficient leisure time, and so on.'

Leave was granted to bring in the Bill, which was read a first time.

Mr CLEMENT DAVIES presented the Magdalen Hospital Bill a measure to confirm a scheme of the Charity Commissioners for the application of management of the charity called the Magdalen Hospital in the County of London. The Bill was read a first time.

INSANITY AS GROUND FOR DIVORCE

In the House of Commons on April 16th the Marriage Bill, as amended in Standing Committee was considered on Report.

Mr TURTON moved an amendment to make it grant of divorce on the grounds of incurable insanity subject to a period of seven years instead of five. That period, he said, would be more consistent with the present law and would also give a better safeguard to those who disliked giving divorce on the grounds.

Commander BOWER, in seconding the amendment said this was one of the most difficult questions to deal with. It was difficult to find any medical man who would give a definition of incurable insanity or would definitely say that the condition of a particular patient was incurable. This allowed of divorce for insanity, whether considered incurable or not, might in many cases have a most unfortunate effect on a patient of unstable mind. Most important of all was the question of those who had voluntarily entered a mental institution. A voluntary patient under Section 1 (5) of the Act of 1930 might leave the institution, hospital, or home on giving 72 hours' notice, or if he was under 16 such notice was given by parent or guardian. They therefore had an astonishing legal anomaly that a person who was well enough to go out of an institution at short notice under the Act was considered by the promoters of this Marriage Bill to be so insane that he could be divorced behind his back.

Sir J WITHERS. No. There is a period of five years and also there must be medical evidence.

Lieut Commander AGNEW said that not only was medical opinion confused but public opinion was in grave doubts on this question. When the doubts existed the period necessary for granting divorce for incurable insanity should not be less than for granting it for overseas desertion, which was provided for the presumption of death after five years.

Sir ARNOLD WILSON said that on behalf of the promoters of the Bill he opposed the amendment. The recommendation of the Royal Commission in 1912 on this subject was that five years should be the period during which continuous care and treatment should be applied before there could be judgment on the matter of incurability.

Mr CROSSLEY asked if the clause meant that a decision could be taken by any medical authority about the incurability of a patient until he had been in an institution for five years.

Sir A. WILSON said that was so. The conditions were that not only must the patient be continuously under treatment for five years but he must also after that be subjected to a medical examination which in the opinion of the Court was sufficient to prove that he was in fact incurably insane. Every thing that had been said in support of the amendment justified the conclusion that doctors would in future be increasingly reluctant to declare that a person was incurably of unsound mind and that the question of five years would be of less importance than it was in 1912. As to the voluntary patients he pointed out that they must have been continuously under treatment without any interval. After a very careful survey of the reports of the Board of Control of the last few years of the figures about incurability and of the very great efforts which were being made with the aid of funds provided by the Medical Research Council the Rockefeller Trust and others to extend the possible relief of insanity he was confident that this clause was as safe as anybody could make it and that they would be ill-advised to increase to seven years the period during which a patient must be under continuous treatment. Out of 100 possible recoveries only two took place after the period of five years.

After further debate the amendment was negatived by 111 votes to 48.

The further consideration of the Bill was adjourned.

NEW BLOCK GRANTS FOR SCOTLAND

In moving the second reading of the Local Government (Financial Provisions) (Scotland) Bill in the House of Commons on April 16th Mr. ELLIOT, Secretary of State for Scotland, said that the Bill had four main objects. First it fixed the amount of the Exchequer contribution given by way of block grant to Scottish local authorities for a period of five years. Secondly it relieved local authorities in Scotland of the payment of contributions under Section 45 of the Unemployment Act 1934. Thirdly it made provision for calculating the grant in future fixed grant periods; and lastly it amended the formula on the basis of which the larger part of the block grant was distributed among the local authorities. With regard to the amount of grant in the next five years the Bill proposed an annual sum of £2,827,000 per annum or £200,000 more than in the previous grant period. In addition it proposed to relieve local authorities of their liability to make payments towards the cost of unemployment assistance which amounted now to about £74,000 per annum. Furthermore no account was taken in arriving at this general Exchequer contribution of the relief afforded to county councils by the taking over of trunk roads which amounted to about £200,000 per annum. It would thus be seen that the local authorities in Scotland would be better off in the next fixed grant period to the extent of £1,433,000 a year than at the present time a very substantial sum. The new formula was more heavily weighted for unemployment and sparsity. The Bill would give substantial additional assistance to the parishes which stood in greatest need of it. The total additional relief amounted to nearly £1,500,000 and over £1,000,000 would be devoted to the necessitous areas. Substantial assistance would also be given to the less needy areas.

After further debate the Bill was read a second time.

MATERNITY SERVICES IN SCOTLAND

The Maternity Services (Scotland) Bill as amended in Standing Committee was considered on Report. Mr. LEONARD moved the following new clause—

It shall be lawful for a local authority in consultation with the local organisation of registered medical practitioners as referred to in sub-section (5) of Section 1 of the Act to publish annually a panel of registered medical practitioners for the purposes of Section 22 of the Midwives (Scotland) Act 1913 such panel to consist of registered medical practitioners regularly practising

midwifery and to be made available to all certified midwives practising within the area of the local authority.

He said the intention was really to give a lead to local authorities.

Mr. MATTHEWS in seconding the new clause said that it simply sought to put into the hands of practising midwives a list of medical practitioners who would be able effectively to assist them in any emergency that they might encounter.

Mr. ELLIOT, Secretary of State for Scotland, said he had every sympathy with the object of the new clause, but in the schemes under the Bill there would be full provision for the midwives to know where the practitioners and indeed the specialists were. The impression of his Department was that the scheme would cover 80 per cent of the confinements in Scotland. The other 20 per cent would not be the poor people but the well-to-do who had their own doctors and were in touch with the obstetric specialist as well. It would not be left to the midwives to pick a doctor from a casual list of practitioners which might or might not be issued by the local authorities. It would be the duty of the midwife to be in touch and to work with the woman's own medical attendant and if she did not know where the medical attendant was or where in his absence some other practitioner could be found then she would be in fault under the new schemes. He hoped the hon. Members who had put forward this new clause would consider that their purpose would be achieved in the schemes under the Bill and would not press the matter.

Mr. LEONARD said he was indebted to the Secretary of State for his explanation and was willing to withdraw the clause.

The clause was withdrawn.

Mr. ELLIOT moved an amendment to the clause providing that the medical schools and other midwifery training bodies should have an opportunity to make representations.

This amendment was agreed to.

Mr. WESTWOOD moved an amendment the purpose of which he said was to strengthen the prohibition of unqualified persons from acting. It was felt that under this clause it would be possible for a young medical student just entering on his studies or for a temporary nurse just starting her training to take control of a case. That was altogether unsatisfactory. Both student and nurse ought to be given a period of training of at least three years before having the responsibility of dealing with maternity cases.

Mr. ELLIOT said neither medical students nor pupil midwives could now undertake a domiciliary case until they had had a complete theoretical course and adequate practical instruction including the delivering of women in labour under qualified supervision in an institution. The existing safeguards went further than the statutory form suggested in the amendment. Under the rules of the General Medical Council no medical student might undertake practical midwifery until the last term of the fourth year of his curriculum. Further he would point out that the whole matter was governed by schemes and he undertook in scrutinising these schemes to give his personal attention to them and to ensure that no danger should arise of medical students going out to cases earlier than the period which hon. Members had put forward. He was certain that the General Medical Council had no intention of relaxing their rules and it might well be that their rules were stiff. He did not want to undertake that men should not go out under three years training when the General Medical Council said that they should not go out until the last term of their fourth year. He hoped the House would consider that his suggestion was adequate to deal with the question of the training of medical students.

Mr. WESTWOOD said after the explanation of the Secretary of State and the pledge he had given he was prepared to withdraw the amendment.

Mr WESTWOOD said the right hon gentleman's explanation on the training of the medical student was quite satisfactory but he thought the House was entitled to an explanation with regard to the training of the nurse. He moved an amendment that midwives should have at least two years' training.

Mr ELLIOT said the full course of the midwives curriculum under the rules of the Central Midwives Board extended over only twelve months and therefore he did not think the amendment would be possible in practice. The Central Midwives Board contemplated an extended period of training, but not, he thought, to the extent which would render this amendment practicable. Women who were already registered nurses under the Nurses Registration Act qualified as midwives after a six months' course, but being registered as nurses they had had a long training already. He thought Mr Westwood had more in view people who were working for the full course of the midwives curriculum under the Central Midwives Board. Looking at the matter from that point of view it would be difficult to start amending by Statute the rules of the Central Midwives Board. The Board tried to make sure that no one should be asked to undertake this tremendous responsibility without having gone through a course which the responsible professional people thought was a proper one. He would, however, be very glad to look into the question whether there was any loophole or gap by which comparatively untrained persons could be faced with this very great responsibility. His belief, however, was that that would not and could not arise. If any safeguard was necessary it could be secured in the schemes framed in conjunction with the local authority and subject to the approval of the Department.

Mr MAXTON said the Secretary of State was relying upon the appropriate professional organisations to see to this matter, but the evil they were trying to combat had grown up under existing professional organisations.

Mr ELLIOT said that the evil to which the hon Member referred had been combated and was in process of eradication under these professional bodies. He thought the professional bodies were tightening up their regulations almost every year in regard to these things.

Mr WESTWOOD said after the very clear explanation and promise given by the Secretary of State he was willing to withdraw the amendment.

The Report stage was concluded and the Bill was read the third time and passed.

THE BUDGET

HIGHER INCOME-TAX AND NEW TRADE PROFITS DUTY

In the House of Commons on April 20th Mr CHAMBERLAIN, Chancellor of the Exchequer, introduced his Budget. He said that in spite of an allowance of over £50,000,000 more for defence in his last Budget a small surplus was anticipated. Owing, however, to the recent acceleration of the defence programme there was an actual realised deficit of £5,597,000. If the defence expenditure had not exceeded the Budget provision by £7,821,000 there would have been a formal surplus of nearly £2,250,000 after applying over £13,000,000 of ordinary revenue to debt redemption. The total revenue for 1937-38 was estimated at £847,050,000 and the total expenditure at £862,848,000, leaving a deficit of £14,808,000.

Dealing with his proposals for changes in taxation the right hon. gentleman indicated that steps would be taken to deal with tax avoidance in regard to "bond washing" and one man investment companies. The report of the Select Committee on the Medicine Stamp Duties had been made public. He had had a good many representations from various quarters since the publication of the report and he was having the recommendations of the committee examined in the light of those representations. But in view of

the very complex issues involved and the extra strain upon the time of Parliament he was not proposing to introduce legislation on that subject in the Finance Bill this year. (Cheers)

Effect would be given from Jan 1st, 1938, to the recent announcement by the Minister of Health in regard to the abolition of the Male Servant Licence Duty. The rate of income-tax would be raised by 3d in the £ to 5s and there would be a new graduated duty on the growth of profits of trades and businesses called the "National Defence Contribution." Mr Chamberlain made it clear that professional would be exempt from the new tax. The additional 3d in the £ on income-tax, the new profits duty and the measures to deal with tax avoidance were expected to yield an additional revenue of £15,150,000 this year, making a total estimated revenue of £863,100,000. After taking account of a total estimated expenditure of £862,848,000 there was an anticipated surplus of £252,000. The aim of his Budget, said Mr Chamberlain, was on the one hand to avoid a tremendous increase in tax burdens which would check convalescence—hence the decision to resort to borrowing for defence purposes—and on the other hand to make such increases as would check feverish activity without inspiring an upstart trend.

In the House of Lords on April 15th the Education (Deaf Children) Bill was read the third time and passed.

In the House of Commons on April 16th the Methylated Spirits (Scotland) Bill was read the third time and passed.

QUESTION TIME

WEDNESDAY, APRIL 14TH

Human Nutrition in Tanganyika

Mr MATHERS asked the Secretary of State for the Colonies whether he could make any statement as to the departmental committee in Tanganyika on the subject of human nutrition in that territory, and whether the committee would take into consideration the work by the International Institute of African Languages and Cultures, pointing out the need of combining medical and anthropological inquiry in respect of nutrition problems.—Mr ORMSBY GORE replied. As the result of the circular dispatch published in 1936 as Colonial No. 121, a Departmental Committee has been set up in Tanganyika as in many other parts of the Colonial Empire to study questions relating to human nutrition. Copies of the memorandum to which the hon Member has already been sent to all African Governments. I have no doubt that the desirability of combining medical and anthropological inquiry will be given full weight to the Committee.

Mr MATHERS: Is there any actual guidance in the dispatch referred to that inquiry should follow the lines?—Mr ORMSBY GORE: Yes. This dispatch suggests certain lines and I think the hon Member knows a special Committee of the Civil and Research Organisation is receiving replies as they come in from the various Dependencies.

Unemployment and Sterilisation in Bermuda

Mr GALLAGHER asked the Secretary of State for the Colonies whether his attention had been drawn to the recommendations contained in the report of the Committee appointed on Feb 5th, 1935, to consider a report on the existing state of unemployment in Bermuda if he was aware that these recommendations provided compulsory sterilisation, whether it was proposed to give effect to these recommendations by means of legislation and if so, whether he would intimate to the Government of Bermuda that the recommendations of the Select Committee were objectionable and that the proposed legislation should not be proceeded with.—Mr ORMSBY GORE replied. The answer to the first and second parts of the question is in the affirmative. As regards the latter part of the question I am informed by the Govern-

of Bermuda that no action regarding compulsory sterilisation is contemplated.

THURSDAY APRIL 16TH

Labour Exchange and Manchester Royal Infirmary

Mr FLEMING asked the Minister of Labour whether he had considered the objection submitted to him against his proposal to erect a labour exchange adjoining the central branch of the Manchester Royal Infirmary; and whether he still intended to proceed with the said building—Mr ELLIS SMITH Mr WEDGWOOD BENN and Mr EMBAY asked similar questions on the same subject—Mr EMBAY Brown replied: I am now in consultation with the Joint Commissioner of Works regarding certain proposals recently made to me informally on behalf of the Board of the Manchester Royal Infirmary but until our inquiries are completed I am unable to make any statement.

Mr FLEMING Has the Minister considered the serious objection of the medical profession in Manchester on the ground that this proposed building will gravely obstruct the work that is being carried on in the central branch of the Royal Infirmary?—Mr Brown: I am aware not only of that objection but of some others which have been put to me. I am also aware that for 15 years past the great social service of the Employment Exchange in Manchester has been carried on in a building that is utterly unsuitable and not fair to the staff concerned. Mr BENN: Has the right hon. gentleman taken any advice as to the public opinion in Manchester with regard to this matter? If not will he be good enough to do so? Mr Brown: I am well aware of the opinion in Manchester. At the request of the representative of the Infirmary I saw him privately and it is for that reason that I am now doing my best to carry out the promise I made to him that I would get consideration for this matter. Replying further to Mr Benn Mr Brown said that some time ago he saw a very important body on this matter and heard all the arguments over again. Mr E SMITH: Would the right hon. gentleman also consider the alternative of taking into consultation the Office of Works with a view to taking over the site and suitably compensating the Manchester Royal Infirmary?

Mr Brown: I prefer to make no statement about that for the moment.

Hours of Employment of Young Persons

Mr PALING asked the Home Secretary whether the Government had considered the report of the Departmental Committee on the hours of employment of young persons in certain unregulated occupations; and what steps they proposed to take—Sir JOHN SIMON replied: Sir, I have been giving careful consideration to this important report and I am hopeful that it will be possible to deal in the Factories Bill with the hours of the young persons employed in connexion with factories, docks and warehouses whose inclusion in the new factory code is recommended by the Committee. As regards the other classes of young persons in whose case the Committee suggested an extension of the Shops Act 1934 it would be necessary to introduce separate legislation which could not be undertaken during the present session.

Deaths following Vaccination

Mr GROSS asked the Minister of Health the number of deaths of infants due to vaccination recorded by the Registrar General in the last ten years—Sir KENNEDY GODDARD replied: The number of deaths of infants under one year of age classified to vaccination or other sequelae of vaccination during the ten years 1926 to 1935 was 4.

MONDAY APRIL 19TH

Medical Practitioners in Nigeria

Lieut. Commander FLETCHER asked the Secretary of State for the Colonies the number of medical practitioners in Nigeria and the proportion born by this number to the total population—Mr OWENSON GORE replied: The number of registered medical practitioners in Nigeria including Mandated Territory on Jan. 1st 1937 was 224. This number bears to the total population a proportion of one medical practitioner to every 80,500 persons approximately.

TUESDAY APRIL 20TH

Insurance Committees and Physical Training

Mr KENNEDY asked the Secretary of State for Scotland if he had considered a resolution adopted and sent to him by the Kirkcaldy Insurance Committee complaining that no representative of national health insurance committees was included in the list of members who were to be responsible for the organisation of the work of the National Advisory Council for Physical Training and Recreation for Scotland and if this omission could now be rectified—Mr ELLIOT replied: The answer to the first part of the question is in the affirmative. With regard to the second part the members of the Council were appointed because of their personal qualifications and not as representatives of particular organisations. It is not at present proposed to add to their number but in the event of further appointments being made the possibility of adding a member with special knowledge of national health insurance work will be kept in view.

Ex Service Man and Treatment for Tuberculosis

Mr GEORGE GRIFFITHS asked the Secretary of State for War whether he was aware that D. A. Warham No. 6 012 364 was discharged from the Rifle Brigade suffering from tuberculosis, that there was no trace of tuberculosis in the soldier's family; if he received any treatment for the disease and whether the man received a pension or a gratuity—Mr DUFF COOPER replied: Yes, Sir. Mr Warham's case received thorough investigation and treatment including surgical treatment which effected a considerable improvement in his condition. He received a gratuity of £18 on his discharge from the Army. I regret that as his disability was not caused by his service he is not eligible for a pension.

LCC HOSPITAL BUDGET

UNDER this heading on March 27th we published a statement of estimated expenditure by the London County Council on their general and special hospitals during 1937-38. It has been pointed out to us that the figures we reproduced relate only to votes on account pending the Council's approval of the complete votes for the year. We now publish the correct figures as submitted to the Council on Tuesday last.

The estimated capital expenditure on general and special hospitals during 1937-38 (excluding provisional sums) is £551,000. The estimated expenditure on maintenance is £5,743,605 made up as follows—

General hospitals	£ 3,398,750
Infectious hospitals	912,460
Sanatoria	217,934
Children's hospitals	3,205
Pathological laboratories	61,63
Maintenance in hospital other than the	
provided by the Council, &c.	203,070
District medical service	41,075
London ambulance service	170,095
Staff	154,095
Miscellaneous expenses	17,495
Sanitary officers	9,261
Public vaccinators	1,000
Diagnosis and treatment of venereal diseases	11,100
Maternity and child welfare	57,600
Mildew services	4,700
Other public health services	945

The total net estimated expenditure for the year (£5,305,820) exceeds the net estimated expenditure for 1936-37 by £212,070. The two principal items accounting for the increase being about £12,000 additional expenditure on staff and about £78,000 extra under the heading of "provisions: clothing, drugs, domestic renewals, &c."

The estimates put forward by the mental hospital committee are £3,000 for capital expenditure and £2,708,425 for maintenance.

MEDICAL NEWS

University of Cambridge

The title of the M B degree has recently been conferred on Mrs E M P Wilson

University of London

On May 3rd, 4th, and 5th, at 5 P M, at University College, Gower street, W C, Prof H Reim, director of the physiological institute in the University of Göttingen, will lecture on some economising mechanisms as a condition of the body's adaptation to increased activity. Later in the month four lectures on the history of physiology will also be given at University College on May 18th Mr E S Russell, D Sc, will speak on ancient biological conceptions, on May 20th and 21st Prof Charles Singer will speak on the emergence of modern physiological doctrines on May 24th Mr D McKie, D Sc, will speak on the development of theories regarding combustion and respiration in the eighteenth century, and on May 25th Mr F G Young Ph D, will speak on the development of certain aspects of metabolism during the nineteenth century. These lectures will be at 5.30 P M. The lectures are open to all interested.

University of Aberdeen

A capital sum has been given anonymously to the university for the foundation of a part time lectureship in psychopathology. It is a condition of the gift that the lecturer shall not be an alienist and that his clinical work shall be done at the Royal Infirmary. The sum of £500 has also been received from Lord Glanely to permit research in rheumatism.

Royal College of Surgeons of England

The museum of the college will be open at the usual times on and after Monday, April 26th.

Royal College of Physicians of Edinburgh

The council of the college will shortly award a Kirk Duncanson fellowship for medical research. Its value will be £300 for the first year. Further information may be had from the secretary of the college, to whom applications should be sent not later than June 30th.

Aberdeen University Club, London

The ninety seventh half yearly dinner of this club will be held at the Café Royal Regent-street, at 7.30 P M on Thursday, April 29th. The chairman will be Sir Peter Chalmers Mitchell, F R S, and the chief guest Sir Benjamin Robertson. The hon secretary's address is 51, Harley street, W 1.

Child Guidance Council

Three fellowships in psychiatry, each of the value of £300, are offered for half time work at the London Child Guidance Clinic 1, Canonbury place, N 1. Further information may be had from the secretary of the council, Woburn House, Upper Woburn place, London, W C 1, and the closing date for receiving applications is May 10th.

Indian Medical Service

The annual dinner of the Indian Medical Service will be held at the Trocadero Restaurant, London on Wednesday June 16th, at 7.15 P M, when Sir Rickard Christophers F R S, will preside. Tickets may be obtained from the joint hon secretary Sir Thomas Carey Evans Hammersmith Hospital, L C C, Ducane road, London, W 12.

The Red Cross in Spain

The international committee of the Red Cross reports that its appeal for funds and for gifts in kind for the relief of the victims of the civil war in Spain continues to meet with response from Red Cross Societies in all parts of the world but that considerably larger sums are required to meet the appalling needs. The committee continues to pay special attention to the question of help to prisoners. Visits to prisons by Red Cross representatives are now permitted in many localities and standardised parcels of food and clothing are distributed. Prison hospitals have been established and some prisoners have been exchanged. Contributions may be addressed to Sir Arthur Stanley at 14, Grosvenor crescent, London, S W 1.

Royal Sanitary Institute

A meeting of this institute will be held in the B. Hall, Monmouth on Friday, May 7th, when Dr W P Nash, medical officer of health for Caerphilly, and Dr William Panes, assistant medical officer of health for Monmouthshire will open a discussion on immunisation in diphtheria. Mr J Jenkin Evans, sanitary inspector for Monmouthshire, will also open a discussion on the public health acts, and their implications in rural areas.

Institute of British Surgical Technicians

On Friday, April 30th, at 8 P M, at the Welbeck Hotel, Welbeck street, London, W, Sir Weldon Dalrymple Champneys will give a lecture to this society on the sterilisation of surgical ligatures. Tickets may be obtained free on application to the secretary of the institute, 6, Holborn Viaduct, London, E C 1.

Carey Coombs Memorial

The Carey Coombs memorial committee and the Bristol Medico Chirurgical Society have arranged for Mr Laurence O Shaughnessy to deliver a lecture on the operative treatment of cardiac ischaemia on Wednesday, May 22 at 8.30 P M in the physiological lecture theatre of the University of Bristol.

French Hospital, London

A clinic for the treatment of hay fever and allied conditions by ionisation is being opened at this hospital. The treatment, which is free, is available to all who speak French irrespective of creed or nationality, and will be given on Wednesdays at 4 P M (first attendance Thursday at 2 P M). Further information may be had from the secretary of the hospital, Shaftesbury avenue, London, W 1.

Institute of Ray Therapy

This institute was established in 1930 at 152, Camden road, London, N W. Its object is "to provide every form of electrical treatment for people of small means" whom it would not otherwise be obtainable" and it is open daily from 2 P M to 9 P M. During 1936 no less than 106,460 treatments were given, and an appeal is now being launched for £25,000 to increase the equipment and enlarge the building. At a luncheon held on Monday Lord Horder the president said that the work done at the institute was now well known to doctors in the neighbourhood and also outside it. In many conditions physical methods had largely superseded the use of medicine in which patients had so much faith, but physiotherapy could not be very satisfactorily undertaken outside a clinic or an institution which provided up-to-date equipment and nursing facilities and men and women with expert training. The public needed a warning against indiscriminate use of old-fashioned machines by untrained people, which was really a form of quackery. Lord Sempill, chairman of the board of governors, explained that unless £25,000 could be obtained at the end of this year, the work being done at the institute would have to be curtailed and patients turned away. At general hospitals surgical and medical work had to take precedence of electrical treatment, and whenever space was urgently needed in a general hospital the electrotherapy department was crowded out—partly because it needed considerable floor space and a special staff. The conditions treated at the institute included rheumatism and kindred diseases, accident cases, discharge from hospital, children's diseases such as rickets, adolescent rheumatism, and enlarged glands, skin diseases, nervous disorders, and diseases of the nose and throat. The institute could and should be a great centre of physical medicine in Great Britain, to compare with the most modern and efficient in Europe and America. It had grown, like all great movements from a very small beginning but it had grown continuously in usefulness.

Other speakers at the luncheon included Miss F. Vanbrugh and Mr Russell Howard who is a member of the medical advisory committee. The honorary physician and medical director is Dr William Beaumont.

Maternity Centre at Loughborough

A new maternity and child welfare centre has been opened here by the mayor to mark the twenty first year of infant welfare work in the town.

Joint Tuberculosis Council

A series of intensive post-graduate courses are being given under the auspices of this council by Dr. Peter Edwards at Cheadle Joint Sanatorium near Market Drayton. The subject is modern methods of therapy in tuberculosis of the respiratory system with special reference to collapse therapy. The next course will be held from May 25th to 27th and there will also be courses from Oct. 28th to 30th and from Nov. 23rd to 25th. Further information may be had from Dr. William Brand, the council's hon. secretary for post-graduate courses, 8 Christ Church place, Epsom, Surrey.

Society for the Relief of Widows and Orphans of Medical Men

A quarterly court of the directors of this society was held on April 7th. The deaths of three of the members were reported and five new members were elected. It was announced that a donation of £111 had been received from the Royal Medical Agency. A first application for relief was received from a widow of a member who was awarded a yearly grant of £50 from the ordinary funds and £25 from the Brickwell fund. The number of widows at the present time in receipt of relief has now reached a total of 60 which is the largest number to be dependent on the society at any one time. The annual general meeting of the society will be held on Wednesday, May 10th at 5 p.m. Membership of the society is open to any registered medical man who at the time of his decease is resident within a twenty mile radius of Charing Cross. Full particulars may be obtained from the secretary, the offices of the society, 11 Chandos street, London, W.1.

International Congress of Radiology

The fifth International Congress of Radiology will meet in Chicago from Sept. 13th to 17th under the presidency of Dr. Arthur C. Christie (Washington). The international executive committee of the congress includes Dr. C. Hurston Holland (Liverpool), Dr. Gösta Forszell (Stockholm), Dr. Antoine Béchère (Paris), Dr. Hans R. Schinz (Zürich), Dr. Karl Frik (Berlin), Dr. Mario Ponzio (Turin), Tamotsu Watanabe (Osaka), Dr. Heliodoro Tellez (Santiago), and Dr. Gottwald Schwarz (Vienna). Russell Reynolds is chairman of the British national group and may be addressed at 30 Harley-street, London. More than 250 scientific papers will be read at the 5-day meeting; they will be delivered in the lecturer's own language and will be flashed on screens simultaneously in English, German, and French as the papers are read. Scientific and technical exhibition will also be held. The secretary of the congress is Dr. B. H. Orndoff, 2601 Clark street, Chicago.

Extended District Nursing Scheme for London

At a meeting held on April 18th under the chairmanship of the Earl of Athlone it was recalled how Florence Nightingale in a letter to the *Times* on April 14th, 1876, noted an old woman who said: "They nurses is real things; now husbands and fathers did ought to pay a niny per week as ud give us a right to call upon they nices when we wants them." Miss Nightingale thought the old woman had put forward a sensible plan and it was the purpose of this meeting held almost exactly 60 years later to put it into practice by instituting a Greater London provident scheme for district nursing. It is hoped wherever there are five or more people regularly employed to make it possible for them to subscribe to the nursing service at the rate of a halfpenny a week. They are not earning more than £8 a week. The benefits will include free nursing care, subject to medical direction, the patient's home for contributors and their dependents, a loan of certain nursing appliances, Midwives' small maternity ward and certain infectious diseases excluded. Lord Horder and Miss Mary Wilmshurst, medical superintendent of the Queen's Institute of District Nursing were among the speakers who supported the scheme. The executive committee may be addressed at Sloane street, S.W.1.

Papworth Village Settlement

At the festival dinner of this settlement on April 20th over which the Duke of Kent presided it was announced that a sufficient sum had been raised to claim Lord Nuffield's provisional gift of £25,000. Mr. E. W. Meyerstein has also given £20,000 towards building the new nurses' home.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. P. L. Gibson to *President* for course.
Surg. Capt. C. F. O. Sankoy O.B.L. to *Victory* for R.N. Hosp. Haslar. W. H. Edgar O.B.E. to *Victory* for R.N.B. and E. Moxon Browne to *Queen Elizabeth*.
Surg. Lt. Comdr. F. Dolan to *Drake* for R.N.B. and to *Colombo* and J. L. Malone to *Pembroke* for R.N.B.
Surg. Lts. I. C. Macdonald to *Pembroke* for R.M. Infirmary Deal; H. O. Connor to *Arrow*. W. H. C. M. Hamilton to *Falcon*. T. A. M. Mansell to *President* for course and to *Drake* for R.N.B. F. A. Croxall to *London*. R. V. Jones to *Challenger*. L. R. Norworthy and G. R. Rhodes to *Drake* for R.N.B. B. O'Neill and M. G. Ross to *Pembroke* for R.N.B. P. G. Stainton to *Victory* for R.N. Hosp. Haslar. F. P. Ellis to *Pembroke* for R.N. Hosp. Chatham; W. S. Miller to *Shropshire*. A. J. Glazebrook to *Excellent* and to *Tedworth* (on commg.); J. G. Vincent Smith to *Victory* for R.N.B.; G. H. C. Critien to *Drake* and W. Boyd to *Cairo*.
The entry of W. G. Smith L.D.S. as Surg. Lt. (D) (published in the *Gazette* of April 2nd) is cancelled. (Vide *Lancet* April 10th.)

ARMY MEDICAL SERVICES

Maj. Gen. FitzG. G. FitzGerald C.B. D.S.O. h.H.S. late R.A.M.C. h.p. retires on ret. pay. Col. A. F. S. Irvine D.S.O. late R.A.M.C. having attained the age for retirement is placed on ret. pay. Lt.-Col. S. W. Kyle from R.A.M.C. to be Col.; Maj. Gen. H. H. A. Emerson, D.S.O. late R.A.M.C. is appointed Hon. Surg. to the King. Vice Maj. Gen. FitzG. G. FitzGerald.

ROYAL ARMY MEDICAL CORPS

Maj. F. S. Gillespie to be Lt. Col.
Maj. R. J. Rosie is retired to the estate.

TERRITORIAL ARMY

Capt. D. S. Middleton to be Maj.
Capt. J. J. McNery resigns his commission.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt. C. A. D. Mitchell from Active List to be Capt.

ROYAL AIR FORCE

Wing Comdr. R. S. Overton to R.A.F. Depot Uxbridge for duty as Medical Officer.
Flight Lt. R. L. Alderson to R.A.F. General Hospital Palestine and Transjordan Sarafand; R. A. Cunningham to No. 203 (Flying Boat) Squadron Basrah Iraq; and J. R. Collins to R.A.F. Station Amman Palestine.
Flying Offr. A. R. Silbald is transferred to the Reserve class D.
Flying Offr. J. Conroy resigns his short service commission.
Flying Offr. J. H. Lewis to No. 2 Flying Training School Digby; S. Iaul to No. 7 Flying Training School Peterborough; and E. B. Sidney to No. 1 Flying Training School, Leuchars.
Dental Branch—Flying Offrs. promoted to rank of Flight Lt.: I. St. C. Aldercliffe O.F. Brown J. H. G. Fensom R. Hill R. A. Pepper and W. H. Smith.

INDIAN MEDICAL SERVICE

Capt. K. M. Bharucha to be Maj.
Indian Medical Department—The unmentioned officers retire. Maj. (Sen. Asst. Surg.) J. B. V. Bracanza and P. H. Foy; Lt. (Sen. Asst. Surg.) J. G. Johnstone G.R.C. on account of ill health.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1 Wimpole street W

MONDAY, April 26th

Odontology 8 P.M. Dr David Stewart and Dr W Lewinsky A Comparative Study of the Innervation of the Periodontal Membrane

TUESDAY

Medicine 5 P.M. (Cases at 4 P.M.) Clinical meeting at London Hospital E

FRIDAY

Anaesthetics 8.30 P.M. Annual general meeting Mr W H Ogilvie Anterior Splanchnic Block. (With film.) Clinical reports of cases will be given by Dr Ashlev, Daily Dr T A B Harris, Dr G H W Keats, Dr W S McConnell, Dr E H Rink, Dr E S Rowbotham, and Mr H W S Wright

BRITISH PSYCHOLOGICAL SOCIETY

THURSDAY April 29th—8.30 P.M. (London School of Hygiene Keppel street WC1). Dr William Brown Hypnosis, Suggestibility and Progressive Relaxation An experimental study

ST JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY

WEDNESDAY April 28th—4.30 P.M., clinical cases 5 P.M., Dr Godfrey Bamber The Common Skin Diseases in Children and their Treatment.

BIOCHEMICAL SOCIETY

SATURDAY May 1st—2.45 P.M. (Department of Biochemistry, University of Oxford). B C J G Knight The Nutrition of *Staphylococcus aureus* Vitamin B₁₂ and Nicotinic Acid. T F Macrae and C E Edgar Differentiation of the Vitamin B₁₂ Complex as it occurs in Yeast. T F Macrae and C E Edgar Some Physiological Effects of Lactoflavin. R A. McCance and M Masters The Chemical Composition and the Acid base Balance of *Archidons britannica* W T J Morgan Some Observations on the Specific Antigen of *B. dysenteriae* (Shiga). A A Levi and E Boyland The Production of Dihydroxy 1, 2, 5, 6 dibenzanthracene from 1, 2, 5, 6 dibenzanthracene by Rabbits M H Lee and E M Widdowson A Comparative Investigation of Blood urea Methods. H W Kinnersley and R A. Peters Observations upon Vitamin B₁₂ and Co carboxylase. R B Fisher and A E Wilhelm A Micro method for the Estimation of Creatinine. R B Fisher and A E Wilhelm The Synthesis of Creatine in the Isolated Rabbit Heart. R Deaneley and A S Parkes Influence of Method of Administration on Effectiveness of Gonadal Hormones. R B Fisher and F Langford A Method for the Detection of Small Amounts of Guanidines. E Walker Bacterial Decomposition of Cellulose

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF BIRMINGHAM

THURSDAY April 29th—4 P.M., Prof. J C Drummond D Sc The Chemistry and Physiological Significance of Vitamin A (William Withering lecture)

ST MARY'S HOSPITAL W

TUESDAY, April 27th—5 P.M. (Institute of Pathology) Sir Almoth Wright F.R.S The Manifest Fallacies of the Statistical Method Applied in Clinical Medicine

BRITISH POSTGRADUATE MEDICAL SCHOOL Ducane road W

MONDAY April 26th—2.30 P.M. Dr C W Buckley Arthritis

WEDNESDAY—Noon clinical and pathological conference (medical). 2 P.M. Dr A A Miles Agglutination Tests as Aids to Diagnosis 3 P.M. clinical and pathological conference (surgical). 4 P.M., Mr J E H Roberts Surgery of the Chest 4.30 P.M. Dr W E Gye Experimental Cancer Research

THURSDAY—2.30 P.M. Dr Duncan White Radiological Demonstration 3.30 P.M. Mr A K Henry Demonstrations of the Cadaver of Surgical Exposures 3.30 P.M. Col L W Harrison Gonorrhea in Women

FRIDAY—2 P.M. operative obstetrics 3 P.M. clinical and pathological conference (obstetrics and gynaecology) Daily, 10 A.M. to 4 P.M. medical clinics surgical clinics and operations obstetrical and gynaecological clinics and operations refresher course for general practitioners

WEST LONDON HOSPITAL POST GRADUATE COLLEGE, Hammersmith W

MONDAY April 26th—10 A.M. Dr Post X Ray Film Demonstration skin clinic 11 A.M. surgical wards 2 P.M. operations surgical and gynaecological wards, medical surgical and gynaecological clinics 4.15 P.M. Mr Arnold Walker Obstructed Labour

TUESDAY—10 A.M. medical wards 11 A.M. surgical wards 2 P.M. operations, medical surgical and throat clinics 4.15 P.M. Mr Woodd Walker Obstruction of the Colon

WEDNESDAY—10 A.M. children's ward and clinic 11 A.M. medical wards 2 P.M. gynaecological operations medical surgical and eye clinics

THURSDAY—10 A.M., neurological and syphilis clinics Noon, fracture clinic 2 P.M. general medical surgical genito urinary, and eye clinic FRIDAY—10 A.M. medical wards skin clinic Noon, operations on treatment 2 P.M. operations, medical surgical, throat clinics 4.15 P.M., Mr Grant Bates Lecture

SATURDAY May 1st—10 A.M., children's and eye clinics 11 A.M. medical wards The lectures at 4.15 P.M. are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION 1 Wimpole street, W

MONDAY, April 26th to SATURDAY, May 1st—General Hospital Vauxhall Bridge road, S.W. AF-1 course in proctology—MAUDSLEY HOSPITAL, Denmark Hill S.E. Afternoon course in Psychological Medicine

NATIONAL HOSPITAL FOR DISEASES OF THE HEART Westmoreland street W

TUESDAY April 27th—5.30 P.M., Dr D Evans B.Sc. Congenital Heart Disease

HOSPITAL FOR SICK CHILDREN Great Ormond street W

THURSDAY April 29th—3 P.M., Dr Donald Paley Enlargement of the Lymph Glands 3 P.M., Dr E. Brain Investigation of Skin Diseases in Children Out patient clinics daily at 10 A.M. and ward visits 2 P.M.

MANCHESTER ROYAL INFIRMARY

TUESDAY, April 27th—4.15 P.M. Mr Geoffrey Jeffery Surgery of Intracranial Aneurysms

FRIDAY—4.15 P.M., Mr F G Wrigley Demonstration of Ear, Nose, and Throat Cases

GLASGOW POST GRADUATE MEDICAL ASSOCIATION

WEDNESDAY, April 28th—4.15 P.M. (Western Infirmary) Dr Hugh Morton Peptic Ulcer

Appointments

BENSON, R L, M.B. Camb, F.R.C.S. Eng, Surgical Registrar at the Royal Northern Hospital, London

BENTHAM, J A, M.B. Glasg, D.O.G. Senior Assistant to Medical Superintendent of the Liverpool Sanatorium.

BRODY, M B, M.B. Sheffield Assistant Resident Physician, Runwell Hospital, Essex.

CROSSLIE, A J F, M.B. Manch, Assistant Medical Officer, the Cheshire County Mental Hospital, Parkside.

FORBES, GILBERT, M.B., F.R.C.P.S. Glasg., F.R.C.S. F., Police Surgeon for Sheffield.

LEON, WILKINSON, A. B.M. Oxon, F.R.C.S. Edin. F. Assistant Gynaecologist and Obstetrician to the L. United Hospital Bath.

McLACHLAN, A E W, M.B. Edin, D.P.H. Medical Officer in charge of the Venereal Diseases Clinic at the General Hospital Newcastle upon Tyne.

MATTHEWS, ERNEST, Ph.D. M.Sc., L.D.S.R.C. F. Prosthetic Dental Surgeon to the Manchester Infirmary.

PATNE, R V, M. Ohl, Camb, F.R.C.S. Eng, Hon. Sec. to the Maidenhead Hospital.

SHELEY, URSULA, M.D. M.R.C.P. Lond., Hon. Asst. Physician to the Children's Department of the Royal Hospital.

SMITH, J C, M.B. Manch., L.D.S.R.C.S. Eng., Dental Officer to the Manchester Royal Infirmary.

STRANG, J.F.A. M.B. Glasg., D.O.M.S. Resident Officer at the Birmingham and Midland Eye Hospital.

Certifying Surgeons under the Factory and Workshop Act. Dr F E HIGGINS (Sudbury District Suffolk.) and P. PITT (Swinton District, Lancaster)

Vacancies

For further information refer to the advertisement columns.

Alderley Edge Ancoats Hosp. Convalescent Home & Harford—Hon. Visiting M.O. £50

Aylesbury Royal Buckinghamshire Hosp.—Second Res. M.O. rate of £160

Bangor Caernarfonshire and Anglesey Infirmary—Sec. J. Jun H.S. £150 and £100 respectively

Barking Borough—Asst. M.O., £500

Bath, Royal United Hosp.—H.S. to Ear, Nose and Throat Dept., at rate of £160

Beckenham Bethlem Royal Hosp. Monks Orchard—Cons. Also Radiologist 150 guineas

Bedford County Hosp.—Second H.S., at rate of £150

Birmingham City—Res. Asst. M.O. £400

Blackburn Calderstones Certified Institution for Mental De. W. Haller Deputy Med. Supt., £750

Blackburn Royal Infirmary—Res. H.S. £175

Boston General Hosp.—Res. M.O. at rate of £150

Brighton & Hove Sussex Hosp. for Women Windleham H.S., £100

Bristol General Hosp.—Third H.S. at rate of £50

British Postgraduate Medical School, Ducane road W. Part time Demonstrators in Clinical Medicine each at Cardiff Royal Infirmary—H.S. to Ophth. Dept. at rate of Cardiff Welsh National School of Medicine—Jun. Asst. Medical Unit £250

Chesterfield and North Derbyshire Royal Hosp.—H.S. to O. and Ear, Nose and Throat Depts. at rate of £150

BIRMINGHAM HOSPITALS CONTRIBUTORY ASSOCIATION—During the nine years of its existence this association has collected and distributed £2,750 984 and its income has risen from £150 000 to £381 000 while expenses do not exceed about 5 per cent. There are about half a million contributors.

nerics.—The Danish and Swedish national groups of the International General Medical Association for Psychotropic Remedies are arranging for the ninth international congress to be held at Copenhagen from Oct. 2nd to 4th. On the first day the subject for discussion will be psychotherapeutics and general practice, on the second the teachability of psychotherapeutics, while the third day will be reserved for other papers, discussions and general business. Papers may be read in German, English or French, and anyone who wishes to read one should notify the president of the association Prof O G Jung, Kusanact, Zürich, before June 1st. The congress is open to all medical men; other psychotherapists and practical psychologists may also take part at the invitation of the various national groups. Dr Oluf Brülé, 2, Amagervej, Copenhagen is secretary for the Danish group and Prof Paul Bjerré, 4 Långbrokrysatan Stockholm for the Swedish group.

NOTES, COMMENTS, AND ABSTRACTS

MEDICINE IN THE PHYSICAL LABORATORY

ONE of the primary concerns of the National Physical Laboratory is to give to industry the scientific help it needs. The annual report for 1936 shows how much of its work has been directed to that end. Many of the investigations, however, are directly related to public health and medicine. One important piece of work has resulted in the unification of X ray and radium dosage measurements, a difficulty of deep radiation therapy has been the correlation of the dosage of these two kinds of radiation. During the year two methods, one using ionisation chambers, the other photography, have been worked out so that radiation from the two sources may be measured in terms of the roentgen, the international unit. Another difficulty, arising from the increasing power of X ray therapy installations, has been the protection of the medical observer from stray radiation. An optical system which was first studied because of its innate interest has been found to provide means of viewing the patient while he is separated from the observer by a thick protective wall.

X rays have been used for studying dental structure. The main crystalline constituent of the enamel proves to be identical with that of dentine, but while the crystallites in the dentine are orientated at random, there is a fibre structure in the enamel. This structure is developed to a greater or less degree in different enamels, a high-quality enamel being associated, generally speaking, with a well marked fibre structure. It appears that calcification is more conspicuous in the enamel the later the enamel is formed in the life of the tooth.

The attack upon noise has been made on several fronts. Loudness is essentially a subjective characteristic of sound and the measurement of it, except by direct comparison, has been unreliable in the past. An objective meter which gives dial readings corresponding to aural loudness has now been designed and tested at the laboratory. It is free from all suspicion of personal error and bias and has the great advantage that it registers the loudness of intermittent and impulsive noises which are so often the cause for complaint. The meter has been used to measure the noisiness of cars, lorries, buses, and motor bicycles. Measurements have also been made for the Home Office of instruments which might be used as alarm signals in air-raids, and of road drills. The silencing capacity of different kinds of floors and partitions has been measured for the Ministry of Health in connexion with the construction of flats for the working classes.

During the winter 1935-36 observations were made to determine the value of daylight illumination at which clerical workers find it necessary to turn on artificial light. The laboratory, in co-operation with H. V. Office of Works, arranged that seventeen typists in one of the large typing offices in Whitehall should have their lights fitted with a device which, unknown to them, recorded the time at which each light was switched on and the illumination at the working position at the instant of switching on. Although the results showed a considerable spread, on average the light was turned on when the daylight had fallen to a value of about 5 foot-candles. Another instrument for measuring daylight has been devised for use more particularly in deep rooms or rooms badly provided with daylight, it should be of service to public health departments having slum clearance schemes. The researches on illumination problems have also been directed to the subject of glare.

The report mentions that the laboratory maintains equipment for testing the distribution of radiation in limited spectral regions from sources such as those much used in therapy recently. On the other hand, many glasses have been examined for the protection they afford to radiation of different

parts of the spectrum. Most of those against ultraviolet light were found to be satisfactory, but many of those designed to satisfy the conditions laid down for infra-red radiation failed by a large margin. It is therefore probable that large numbers of industrial workers are deriving from their protective goggles much less protection than is believed desirable and less than is certainly obtainable without sacrifice in the visibility of the work.

Among the routine undertakings of the laboratory are the assaying of radium and the testing of clinical thermometers, the latter must now be of a certain thickness, have durable pigment on the scale, and have other fixed characteristics if they are to conform to the British standard specification and to receive the "Kew" certificate.

CONVALESCENT HOMES FOR CHILDREN WITH RHEUMATIC CARDITIS

THE value of convalescent establishments for children suffering from rheumatic carditis has been much debated. It is pleasant to learn therefore from the annual report for 1936 of the Children's Heart Home, Lancing, Sussex, that the results of treatment at this home have been good. Its members of the honorary staff of the Hospital for Sick Children, Great Ormond-street, are consulting physicians to the home at Lancing, which accommodates 70 children and provides them with education satisfying the Board of Education. The average length of stay of each child in 1936 was 100 days (a period considerably shorter than that reported at Birmingham and Broadstairs 10 years ago), preponderance of girls over boys was 140 to 1 and the ages of the children received between 5 and 12. Otherwise the report includes no clinical details. During the last 10 years so many new beds have been set aside for the treatment of rheumatic disease in childhood, that it is clear that sufficient material must have accumulated for the publication of the results of treatment, and, even more important, treatment plus after care and of re-examination of children returned to their homes. Ten years' relapse after return home in some form (rheumatic carditis, or chorea) occurred in about one-third of children re-examined, and it is of cardinal importance to know whether these figures have importance. The cases under treatment at West Wycombe, Lancing, and in even greater numbers at Cardiac and Brentwood under the L.C.C. should by this time be adequate to furnish the basis of a comprehensive report which would be welcomed by all interested in the problem presented by rheumatic carditis.

BOARD OF CONTROL.—The Board of Control, under the approval of the Minister of Health, have appointed a committee to advise upon questions arising in connexion with scientific and ancillary mental health services which will include the following: Lord P. (chairman) Sir Laurence Brock, Sir Hubert Bond, A. A. W. Petrie, Dr. Adelino Roberts, Dr. C. Thomas, and Dr. George Somerville. Mr. H. J. G. will act as secretary. The Mental Treatment Act, 1930, empowered local authorities to provide for patient treatment and for the after care of mental patients, and, subject to the approval of the Board, to undertake or contribute towards the expenses of, research in relation to mental illness. An advisory committee was appointed in 1931 but owing to the financial crisis its work fell into abeyance. The primary function of the new committee will be to advise the Board on the organisation and encouragement of research, and other ancillary matters, will be within its purview. On technical questions relating to research the committee will have the expert advice of members of the committee on mental disorders of the Medical Research Council.

ADDRESSES AND ORIGINAL ARTICLES

THE PREVENTION OF PULMONARY TUBERCULOSIS AMONG ADULTS IN ENGLAND IN THE PAST AND IN THE FUTURE *

BY P. M. D. ARCT HART, M.D. Camb. F.R.C.P. Lond.

ASSISTANT PHYSICIAN TO UNIVERSITY COLLEGE
HOSPITAL, LONDON

(Continued from p. 973)

THE national tuberculosis scheme was designed at a time when contact with open tuberculosis was considered chiefly dangerous to children. While precautions were advised for adults, doubts as to their necessity were commonly expressed. During the last decade or so however more attention has been paid to the risks run by adults and particularly by young adults. This is evident from the opinions of many physicians to the London tuberculosis dispensaries (noted by Bentley (1936)) who points out also that the incidence of new pulmonary cases in London during 1926-35 among child contacts examined was 10 per cent whereas among adult contacts examined was 7 per cent.

It is obvious that exposure in some form is more dangerous than no exposure at all for without exposure there can be no infection but we should like to know the position of adults facing exceptional exposure to contact as compared with that of adults encountering exposures of the kind met with in ordinary life. Again we should like to know whether young adults run a greater risk from exposures than older persons; and to know the part played by exposure incurred before adult life in the development of progressive lesions later, compared with the effect of exposure encountered actually during adult life. And we should also like to know the comparative risks run by adults who react negatively and those who react positively to tuberculin.

What information is available? Of late years much work has been published upon the fate of adults who are facing or are about to face exceptional amounts of exposure. Among these are home contacts, work contacts, medical students, and

were of the "adult" type. In exposed children the radiographic incidence of primary lung complexes increased with the length of time after the commencement of the exposure but in these adults it did not and from this it was inferred that their adult type lesions were due to exogenous reinfection acquired by contact after the age of 15 in lungs already the site of first infection (see Opie, McPhedran and Putnam 1933, Putnam 1936). Since however the tuberculin reactions before the commencement of known exposure are unknown we cannot exclude the less likely hypothesis that the adult type lesions found were due to endogenous reinfection (arising by blood spread) from a first infection focus that itself was acquired by contact after the age of 15. For while the proportion of persons that acquired first infection during exposure after the age of 15 might have been too small to cause a significant gradual increase in the radiographic incidence of primary complexes, it might still have sufficed to provide the number of adult-type lesions found.

It is clear at least from these valuable observations that exposure in their homes during adult life was an important factor in the production of adult type progressive pulmonary lesions in these contacts. And more recently these authors have brought forward evidence of the greater danger of this household contact to adults than to children (Opie, McPhedran and Putnam 1936).

Opie's procedure was in the main to identify his families by the primary case and to work forwards from the commencement of known contact. The opposite though more limited method has been used by Lloyd and MacPherson (1936) at the Brompton Hospital. They studied the case records of a series of clinically tuberculous young adults aged 15-24 so as to determine the time relationships with the termination of known exposure to any earlier case in the home or elsewhere. In 40 per cent of the patients evidence was found of such an earlier case the majority (82 per cent) having been in the home. In 80 per cent of the young adult patients with evidence of an earlier primary case the onset of their own disease was found to have been either while they were still in contact with the primary case or within five years of termination of known contact.

This work supports the view that home exposure to clinically recognisable tuberculosis during adolescence or adult life plays a large part in producing tuberculosis among young adults.

THE POSITION OF MEDICAL STUDENTS

The incidence and extent of radiographic adult type lesions in medical students appears to be greater during their clinical than their preclinical training. Since the students are older during the clinical course and since the morbidity of pulmonary tuberculosis also increases somewhat rapidly with age among young adults, assessment of the importance of contact depends almost entirely upon comparison with controls of the same age which are very difficult to obtain. However comparing medical students with a small series of dental and law students (Hetherington, McPhedran, Landis and Opie (1933)) did find a higher incidence of important adult type apical lesions in the medical students suggesting damage from exposure to contact in adult life during their clinical training.

THE POSITION OF HOSPITAL SURFACES: INFLUENCE OF PREVIOUS TUBERCULIN SENSITIVITY

The position of adult contacts has so far been discussed without reference to previous tuberculin

Adults Exposed to Exceptional Degrees of Contact

HOME CONTACTS

Using their comprehensive scheme of family records, Opie and his co-workers have studied the development of pulmonary tuberculosis in persons of various ages after exposure to contact with this disease in their homes in Philadelphia.

Persons apparently first exposed to sputum positive cases at some date after the age of 15 developed progressive lesions more often than persons similarly exposed to sputum negative cases and still more often than persons exposed to corresponding age in the general population. The annual attack rate of manifest—i.e. clinical—pulmonary tuberculosis in the persons exposed to sputum positive cases, showed this excess at its maximum 4-6 years after the commencement of the known exposure while their rate of death rate showed its maximum excess 2 years later.

With few exceptions these progressive pulmonary lesions in persons apparently first exposed after the age of 15

The Miltroy lectures for 1937 delivered before the Royal College of Physicians of London on Feb. 10th and 22nd 1931.

reactivity This aspect of the problem has been investigated in probationer nurses, a fair proportion of whom come direct from rural districts which means that many may be negative reactors on entry Heimbeck, working at Ullevaal Municipal Hospital, Oslo, found that tuberculin negative probationers, brought into contact with open tuberculosis during their training, ran a serious risk of developing lesions such as pleurisy, erythema nodosum, and even meningitis, attributable to tuberculous first infection These lesions, as might be expected, did not occur so often among those already first infected, as shown by a positive tuberculin reaction Hence the original "negatives" were at a disadvantage

Heimbeck's figures also appear to show that in a given limited time the original negative reactors developed serious adult type lesions more frequently than did the original positives These lesions might be explained as due to endogenous reinfection arising by blood spread from a first-infection focus acquired, by contact, during their training Heimbeck does not discuss this satisfactorily, but he does make it clear that he attributes this second difference between the fate of the originally negative but now positive nurses, and that of the originally positive nurses, to the previous possession of specific immunity by the latter but not by the former Hence the original negatives appear again to have been at a disadvantage He supports his view by citing the fate of nurses who became tuberculin positive as the result of BCG immunisation This was much the same as the fate of those who were originally positive without artificial immunisation

It should be noted that the cases of manifest disease described by Heimbeck among the originally tuberculin negative nurses of his series occurred within a year of their becoming positive, the latter change having usually taken place by the third year of their training, but for those who had not manifested the disease within one year of the change from negative to positive the subsequent fate was no different from that of the originally positive reactors (see Heimbeck 1936)

The appearance of troublesome accompaniments to tuberculous first infection in nurses who are negative reactors to tuberculin before their training, as found by Heimbeck, has been confirmed by several authors One of these (Mariette 1936) has also provided tentative confirmation of the greater risk of the adult type of disease appearing in this group than in the group of originally positive reactors This second difference in fate is, however, in conflict with Opie's experience with medical students, among whom no correspondence was found between the occurrence of adult-type lesions and the original tuberculin reactivity, nor does it agree well with Opie's interpretation of the adult-type lesions in his home contact series as being due to exogenous reinfection (see above) No final conclusion, therefore, can be reached until more information is available

A somewhat obvious suggestion as to the arrangement of the results of work on this problem may be made here It is best to compare the fate, in a given period, of the originally positive reactors not with that of all the originally negative reactors, but with the fate of those originally negative reactors who have become positive as a result of exposure In Heimbeck's work this would make no difference to the figures, since all his negative reactors changed to positive within three years of commencing exposure during their nursing training but, since such a change of reactivity does not take place so completely in all hospitals, the two above methods of comparison are not necessarily identical

Protection of Young Adults Exposed to Exceptional Degrees of Contact

The following three principles might reasonably be adopted for averting the possible danger to adults, who are, or are about to be, subjected to known or perhaps intense or frequent exposure to open tuberculosis

(1) Known exposure to contact in adult life, both tuberculin positive and of tuberculin negative persons should be reduced to a minimum. (In the near future this opinion may have to be modified to lay special stress upon young adults, and especially on negatively reacting young adults)

(2) Adults, both tuberculin positive and tuberculin negative, who are known to be in contact with open tuberculosis should be kept under observation during the period of exposure (This opinion also may have to be modified to lay special stress upon young adults and especially young adults whose tuberculin reaction is known to have changed from negative to positive as a result of the exposure)

(3) After the termination of the known exposure, the observation of adults (except perhaps those who have retained their negative reactivity) should be continued for some years

How can these principles be embodied in practice in the near future? The following remarks are restricted to young adults in the category under consideration—namely, home contacts, work contacts, medical students, and hospital nurses

PRACTICAL MEASURES

For home and work contacts protection, both of positive and of negative reactors, from the source of potential infection is likely to remain the main policy with young adults, as it is with children, though of course it may unfortunately happen that this source, whether in the home or at work, is not discovered after one or more secondary cases have already occurred Such protection of young adults like that of children, will become increasingly effective as more expeditious diagnosis and removal of sputum positive cases for residential treatment becomes practicable, as the sanatorium segregation of persistent sputum positive case becomes more widely practised, and as further advances are made in the schemes of after care so as to reduce the contact of sputum positive patients and so as to minimise their chance of relapse into this infectious state Incidentally, such measures would help to remove the growing objection of employees to the presence of an infectious fellow worker

Here I may mention the growing interest in the early recognition of infectiousness among persons with apparently minor lesions in the lung This mainly turns upon technical advances in sputum examination, such as concentration of organisms, examination of sputum contents, improved methods of culture, and examination of "morning saliva" (see Holmes 1936)

For medical students and nurses, protection from known sources of potential infection by complete avoidance of exposure is clearly unattainable The most that can be expected is the reduction of exposure to the minimum by hygienic measures, though these are perhaps more difficult to carry out in general hospitals than in special tuberculosis institutions (Joint Tuberculosis Council 1936)

If Heimbeck is right, however, we must be prepared to regard negative tuberculin reactivity in young adults exposed to contact with open tuberculosis as indicating special disadvantages—namely, a risk of clinical accompaniments to first infection and a greater risk of progressive adult type pulmonary

indications later. Special steps may therefore have to be taken for the protection of negatively reacting students and nurses, particularly if the proportion of negative at the commencement of clinical training should increase.

One suggestion is to refuse negative reactors. This course would be harder to follow with students who would already be half way through their training than it would be with nurses but even with nurses continuation of the present shortage of applicants for posts at many tuberculous institutions would create considerable difficulties. If it were decided eventually to follow such a drastic course with medical students the unfortunate man in his third year of study would be compelled not only to pass an examination in intellectual capacity to the satisfaction of the anatomists and physiologists and to pass a test of mental fitness to the satisfaction of the industrial psychologists but also to pass a tuberculin test to the satisfaction of the immunologists.

A less drastic though hardly more practicable suggestion for the protection of those tuberculin negative probationer nurses who train at a general hospital is that they should avoid the tuberculous ward, if such exists until their reactivity has changed to positive.

A third and much more promising suggestion is to vaccinate these nurses with BCG not allowing them to be brought into contact with cases of tuberculosis until their reactivity has changed to positive. The reports of recent investigations upon BCG vaccination of tuberculin negative infants (Wallgren 1931, Acreasturi and Park 1936) and nurses (Heimboek 1936) have been distinctly encouraging.

Adequate observation including periodic examination during and for some years after the period of exposure (see Jessel 1930, Lloyd and MacPherson 1936) should be used to reveal such progressive pulmonary lesions as do develop in spite of all protective measures. No methods of carrying out such periodic examination of this kind will be discussed later.

The Contacts of Ordinary Life

Measures to reduce the amount of contact with infectious cases together with improvement in housing and hygienic conditions, may be expected to increase the proportion of children who reach adult life without becoming tuberculin positive. If a negative reaction in a young adult should come to be regarded as entailing a special risk in the face of exceptional exposure the question would arise as to the risk run from exposures met with in the ordinary circumstances of life.

This has been the subject of considerable speculation. Indeed it has already been suggested (Dahl 1933) that the recent retardation in the decline of pulmonary tuberculosis mortality among young adults in this country has been partly due to an increased incidence of negative reactivity at this age with a corresponding reduction in immunity. Such an explanation is however disputed by Bradford Hill (1936) and would be untenable if as appears possible the decline in mortality in this age group once more being resumed. As a matter of fact it is known of the present degree of tuberculation of young adults of the urban working class population of England and still less of those of its rural districts. Certainly there seem to be insufficient grounds at present for any special action to protect negative reactors in particular in the population at large under ordinary circumstances of life. Nevertheless such a possibility be deemed fantastic I may refer to the procedure in recruiting for the Japanese

navy where, I am informed only positive reactors to tuberculin are accepted for service.

As to the future, we may hope that any danger of producing a large proportion of adults in the general population who would be open to the risk incurred by peoples living under primitive conditions will be offset by the fewer and smaller doses of infecting bacilli likely to be encountered by a higher standard of living of the people and possibly also by artificial active immunisation.

At the same time it is important to have records of the changing tuberculation of young adults and its relation to changing morbidity and mortality. In particular we shall do well to keep a watch for the development of classes or areas with a high incidence of adult negative reactors and a low incidence of pulmonary tuberculosis cases and other classes or areas where the opposite holds in case the movement of persons from one class or area to another may prove important epidemiologically.

Conclusions Concerning Contacts

Contact with open tuberculosis has its dangers in adult life as well as in childhood and much of the interest in the infectiousness of this disease is rightly being transferred from children to young adults. Preventive action in the future to protect adults known to be in contact with open tuberculosis is likely to aim—more than at present—at limiting the exposure, at increasing individual resistance and at maintaining close observation for the early detection of progressive lesions. Those who react negatively to tuberculin may require special protection; they may need particularly close observation should their reactivity change to positive as a result of the exposure; or they may require artificial immunisation. By a combination of preventive measures such as these with the more general social measures discussed earlier we may confidently hope that the benefit to the community from reduction in the unfavourable consequences of tuberculous infection will far outweigh any harm from loss of immunity resulting from its diminished occurrence.

(To be concluded)

THE RATIONALE OF CERTAIN METHODS USED IN PHYSICAL TREATMENT *

By SIR LEONARD HILL, M.B. Lond. F.R.S.

DIRECTOR OF RESEARCH AT THE ST. JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE

THE range of radiations that includes gamma rays X rays, ultra violet and infra red light and the high frequency electric waves used in broadcasting forms one great continuous spectrum of electromagnetic waves. The various regions of this differ only in wave-length the gamma rays being inconceivably short and those used in radio being many metres long. Still shorter even than gamma rays are the cosmic rays that come from the universe with great penetrating power and knock electrons off the living substance of our bodies with what effect if any we do not know.

Radium

Radium emits (a) alpha particles or rays which are helium nuclei projected at high speed and are

A lecture given at the St. John Clinic and Institute of Physical Medicine on Feb. 26th.

completely absorbed in passing through the thickness of an ordinary sheet of paper, (b) beta particles, or rays, which are electrons travelling at high speed and are stopped by 1 mm of lead, or 0.5 mm of gold or platinum, (c) gamma rays, which are photons with an average energy higher than that of X ray photons, those of the highest energy can traverse many centimetres of lead.

The X rays are generated at voltages from 10-1,000,000 kv, a range of wave lengths extending from 2 to less than 0.05 Å (Angstrom units = 10^{-7} mm). The action of the soft X rays can be compared to the beta rays of radium and that of the hard with the gamma rays.

At first it was thought that rays of different qualities were capable of producing different kinds of reactions, but it is now known that the erythema producing effect on the skin does not differ whether caused by gamma or by hard, soft, or very soft X rays. Difference in magnitude of reaction is due to the relative amount of energy absorbed per unit volume of tissue. With equal amounts absorbed in equal volumes of living substance the effects are the same regardless of the penetrating power of the rays. Thus gamma and X rays produce similar changes in the chromosomes of the nuclei of ova and similar mutations may arise—e.g., in the fruit-fly *Drosophila*. Dividing cells are those most sensitive to radiation, and in producing an effect the rate at which the rays are absorbed is very important. When a beam of high intensity is absorbed the extensive ionisation initiates destructive changes in all the cells, on the other hand, the slight damage done by a beam of low intensity can be repaired, and there may be no result. Hard rays under appropriate doses may injure the more sensitive tissues and leave others unharmed. Thus by gamma rays of low intensity the seminal epithelium alone is injured, with high intensity the entire testis degenerates.

The erythema reaction of the skin is not a good test of radiation. Minute living cells such as the ova of *Drosophila* or of the axolotl are much better, failure to hatch out being the index. The very small penetration of soft X rays and of ultra violet rays must be borne in mind. The radiation of one, or of both kinds of germ cells, before fertilisation may result in the production of monsters. Applied to developing organisms irradiation effects the most rapidly growing systems such as nervous, vascular, reproductive, and renal. Irradiation inhibits processes of regeneration in invertebrates in which processes there is taking place active division of cells. Ultra violet rays are much less effective than very low voltage X rays or cathode rays.

Repeated X ray irradiation of the skin swells the connective tissue bundles, destroys cells and thickens the cutis with shrinkage of the skin. Similar changes occur in the walls of the blood vessels, leading to occlusion, the epidermal cells swell and show abnormal mitosis. Necrosis in the superficial layer of the cutis and proliferation in the epidermis takes place and depilation may result. Ultra violet gamma, and X rays alike produce dilatation of vessels, stasis, diapedesis, and oedema. Similar intensity of the visible rays alone do not produce such destructive effects on the skin. In frost bite the rapid loss by radiation produces the same sort of damage as heat burn does.

Exposure of the body to a massive dose of X rays or radium, or the intravenous or oral administration of a large dose of thorium or radium salts or of radon, alike produce destruction of marrow and lymphoid tissue, leucopenia, degeneration of epithelium

hyperæmia of the intestines, cellular degeneration of organs, and desquamation of epithelial linings. Infra red rays produce flushing of the skin at the time of exposure, ultra violet rays after a latent period of one hour or more. For X rays the latent period is 2-5 days, and for the gamma rays of radium, weeks. The length of latency indicates the time the secondary changes take to appear in the living cell.

EFFECT OF WEAK DOSES

The giving of salts of radium by the mouth or by injection is dangerous. If taken by the mouth damage may be done to the mucous membrane of the intestines especially if the patient is constipated. When injected 80 per cent may be retained in the tissue principally in the bone marrow, disappearing very slowly. Thus deposits are formed from which radiation may be emitted for a long time. A dose of radium salts equivalent to 0.5 mg of radon element can prove fatal. Several women died licking brushes when applying a luminous radium paint to the dials of watches. The amount in their bodies varied from 0.01-0.08 mg. An American citizen died through repeated injections in order, as he thought, to rejuvenate himself. A solution containing 0.001 mg of radium and thorium per ounce of water. The activity of the emanation of radium declines to a half in 3.85 days and falls to less than 1 per cent in a month. When taken by the mouth 90 per cent is given off by the lungs in an hour, and so very little stays in the body to form an active deposit. It is soluble gas and is absorbed may reach every tissue, whereas in consequence there will be a free action of the alpha rays. Thus is not the case when radon is applied in plants or other containers, which exclude these rays.

THERAPEUTIC USES

The unit of radon is a millicurie, the amount of gas in equilibrium with 1 mg of radium element. For weak concentrations the Macho unit (M.U.) is 2,500,000 of which equal 1 millicurie. Some waters are radio active—e.g., Joachimsthal with 600 M.U. per litre and Baden Baden with 100 M.U. Artificial radio active waters are prepared generally with 8-30,000 M.U. in 1 litre as the daily dose. Continuous inhalation of radon in high concentration caused loss of weight, with leucopenia, enlargement of spleen, hæmorrhages of the lungs and glandular atrophy. It is claimed that small doses have a stimulating effect upon cell activities and are inimical to morbid states. There is no statistical evidence that spas with a high content give better curative results than spas with a low one.

In a series of cases of chronic arthritis and hypoplasia treated with a concentration of 80,000 M.U. in 15 oz of water by Howitt, Pillman Williams and Russ (1937) no benefit other than subjective was found in the clinical condition, while no injury results were noted. There is no evidence that a small quantity of radio active material in electrically heated pads is useful.

In a series of in patients treated with much larger doses—2,500,000 to 10,000,000 M.U. in 10 oz of water—no improvement was noted, except in two cases of chronic gout, more requires to be done to test the effect observed even in these two cases. Red cells fall in number when large doses are given. A sign that the treatment is risky. We must be in mind that cancer of the lung occurs to a high degree in miners who extract pitchblende, the ore from which radium is obtained. Workers in X ray radio active substances suffer from dermatitis.

particularly those who come in contact with tar or paraffin and skin cancer may result. They also suffer from anaemia and leucopenia and necrosis of the jaw bone. Sarcoma has resulted from a radon tube left in the body. In handling radium lead or tungsten alloy screens must be used and the period of work made short.

It has been shown recently that the two principal chemical systems of cell life that supply energy—respiration and glycolysis—are differentially attacked by gamma radiation applied at body temperatures. Thus tumour cells lose their power of using oxygen during a period when glycolysis remains unaffected, but if the tissues are cooled to 10° C or lower the reverse happens. Normal tissues unlike tumour cells do not use glycolysis as a source of energy except in a minor degree. Within the utilisation of carbohydrates by oxidation or by splitting processes is inhibited by gamma radiation, nitrogenous products probably proteins are broken down to supply energy to the partially damaged cells (Crabtree 1936).

Glyoxalase a ferment which was supposed to be important in the series of reactions which result in the formation of lactic acid in cells is resistant to gamma radiation. If a rat tumour is irradiated with a dose too small to visibly affect it and seven days later the tumour is irradiated and so on the effect becomes cumulative. The rate of growth and the percentage of successful inoculations falls off (Cramer 1936). Such a small dose then is harmful not stimulating to tumour cells.

Ultra Violet Light

The short ultra violet rays penetrate so slightly that their effects are limited to the epidermis and superficial capillary loops of the cutis. The absorption of products of the damaged cells causes a flush first in evidence some hour or two after exposure. The skin next day is sharply reddened; a section of it shows that leucocytes have infiltrated among the cells of the superficial layers, granules appear in the cells round the congested capillaries. In thirty hours the reaction is increased, nuclei of the superficial cells stain dimly and degenerated cells are to be seen. The pigment layer is disturbed and here and there the cutis is separated from the epidermis. The reaction now subsides but the greatest swelling of the connective tissue cells is seen on the third day. The inner layer of the epidermis pigments as it and the blood vessels return to normal. The outer layer desquamates.

One of the most important actions of the ultra violet rays is the production in the skin of vitamin D. The vitamin is produced by activation of ergosterol present in minute amounts in the sebium. This is brought about by the shortest wave lengths of the ultraviolet of about 2900 Å. These are absent in winter and screened off by smoke pollution in cities. Rickets can be prevented by suitable exposure of the skin of infants and children to the sun or are lights. Vitamin D is also obtained by eating food such as cod liver oil and particularly liver oil halibut oil being especially potent. It is formed by the action of the sun on green food of both land and sea. The milk of cows contains the vitamin when they are fed on green food, not when they are stall fed on oil cake and straw. Some animals secure this vitamin by licking except preening their fur or feathers and carnivora by eating fur or feathered animals. Vitamin A is synthesised in animals from carotin a common pigment of green plant, carrots &c. The B vitamins are plentiful in green plants but even more so in those grown in the dark. The anti-carcinogenic vitamin C

is developed not only in green plants but in citrus fruit and in germinating seeds. Certain animals such as rats can produce it in their own bodies. Vitamins are destroyed by ultra violet rays but not by that brief exposure that is required to form vitamin D.

THERAPEUTIC USES

The antirachitic effect of ultra violet light is exerted by rays at 2530–3000 Å and very weakly by those at 3130 Å. The amount of energy of the shortest wave length in sunlight—about 3000 Å—which is effective in preventing rickets is always very small. Infusoria are killed about three times as quickly with rays at 2800 Å as with those at 3000 Å while those at 3130 Å have no effect. Hemolysis is most active at 2530 Å. Erythema of the skin is produced by 2900–3000 Å and also by 2530 Å where there is a strong line in the mercury spectrum. These latter rays penetrate the epidermis less deeply than the 3000 Å rays of sunlight, and the resulting pigment is in consequence lighter in colour, thus the sun browns the skin best. Patients who do not pigment well such as red haired freckly people have to be exposed to sun treatment with care. Protection against ultra violet light is secured by thickening of the horny layer and by pigmentation of the epidermis. By giving doses that produce a mild erythema once a fortnight time is given for the erythema and desquamation to pass off and the skin again becomes sensitive. The body can be treated in four parts, thus if treatment is given twice a week, exposure of any one part is given once a fortnight. By thus plan the length of exposure can be kept short, for if the whole body is exposed each time the skin becomes less and less sensitive and to produce an effect the exposure has to be made longer and longer.

Health is stimulated by suitable doses of ultra violet rays, and immunity is said to be increased against staphylococcal infections. Overdoses cause fever irritation and depression and are dangerous to those who are fighting an active tuberculous infection. The doses for such patients must be small and carefully adjusted. The effect of absorption of products of sunburn from the skin may be compared with those of protein shock produced by injection of milk or of the patient's own blood. Ultra violet irradiation is one of the best means of producing counter irritation and blanching doses prove very useful in the treatment of scintica &c. The irradiated skin is covered with Elastoplast bandage and left untouched till healed (Hilman 1937).

Intense doses given by the water-cooled mercury lamp or the water-cooled arc are used in the Fin en Institute to heal lupus vulgaris by producing a reaction in the skin. Light treatment is also valuable for alopecia areata, eczema, psoriasis, acne, boils and carbuncles, erysipelas and septic wounds, surgical tuberculosis, and for wasting and ricketsy children. It stimulates breeding in birds, mice and monkeys, and no doubt also in man. Good pigmentation of patients is thought by A. Rollier to be a sign of well being and for wounds Oscar Bernhard the pioneer in this form of treatment uses the Alpine open air and sunlight.

Infra Red Rays

The penetrating infra red rays are of particular value in addition to the ultra violet rays—for there seems to be no antagonism in between ultra violet and heat rays. These penetrating rays relieve pain in cases of sprain &c and by softening and making supple rheumatic tissue enable curative movement.

and massage to be carried out. The long infra-red rays are absorbed by the surface of the skin and do not penetrate, they may raise the superficial temperature from 32 to 41–44° C, while the temperature 10–25 mm below the surface is not raised more than a degree above body temperature, and then only by conduction of heat. The temperature of the surface rises quickly to a maximum, and quickly drops when the irradiation ceases. On the other hand, the short infra-red and red rays by penetrating may produce a rise to 40° C 25 mm below the surface, while the surface is raised only to 38°. In this case the maximum rise and fall are reached more slowly, there is a drop of temperature from within outwards, and this is accompanied by a feeling of refreshment and relaxation. After insolation has ceased the surface of the skin quickly falls in temperature, but the deeper layers may take three quarters of an hour to fall. With the putting on of clothes after insolation the effect may last for hours.

The heating of the blood and subcutaneous tissues by the short infra red and luminous rays is one of the most important of curative effects (Sonne 1921). Pigment in the epidermis absorbs and transforms all the rays of sunlight into heat, and thus in its turn excites the nerve-endings and evokes sweating, thus overheating is prevented. A negro owing to his pigment can have a thinner skin and so lose heat more easily.

It must be kept in mind that infra-red radiation that will not go through a thin layer of water will not penetrate the epidermis. Thus only 0.5 per cent of the rays from a dark heater, 15 per cent of those from a carbon arc, and about 30 per cent of those from a tungsten arc and from the sun penetrate 1 mm of flesh. Oiling the skin by diminishing the scattering of the rays increases the penetration of the short infra red and visible rays. The value of a tungsten arc no doubt depends in part on the greater number of penetrating rays coming from this source. Sonne found during irradiation with the highest endurable intensity that the surface skin temperature rose to 43.8° C with visible and to 45.5° with the longer infra red rays. With visible rays a maximum temperature at 5 mm depth was then 47.7°, and with longer infra red rays 41.7°. The amounts in gram calories per sq cm per minute, which could be borne by the skin, was 3.11 for visible, 1.79 for shorter, and 1.33 for longer infra-red rays. The visible rays, except the red, are absorbed by the blood in the cutis, and warm this, the heat is then circulated over the body. How the red and short infra red rays penetrate beyond the cutis is seen on placing a glow lamp in the mouth and standing in front of a mirror in a dark room. A red glow comes right through the cheek, it does not do so in the case of a negro, and only to a small extent in the case of a Japanese.

I find that the long infra red rays from dark or dull red sources acting on the skin reflexly congest and narrow the airways of the nose and lungs, an effect which is set aside by cooling the skin with a fan and in some people by rays from bright sources—the antagonistic rays are in the short infra red region. The stuffiness felt in rooms heated by dark or dull red sources is due to the action of the rays on the skin, and the reflex action on the air tubes and nasal sinuses, and has, in my view, nothing to do with the chemical purity of the air. All rooms so heated should be ventilated with enough cool air to set aside the stuffiness. A greenhouse heated by the sun feels stuffy compared with the open air, because the sunlight is absorbed by the objects

within and turned into dark heat, and this is trapped by the glass, while there is no movement of the air.

For infra red treatment bright sources are those which give off the more penetrating rays, e.g., 1000 watt electric bulbs fitted with concave mirror reflectors, or the clinical gas lamp. Edison's "daylight" lamp gives relatively weak ultra red rays coming from a tubular mercury-vapour arc at low tension, together with plenty of infra red from a number of incandescent lamps, and it is an effective method of treating the whole body, as close to that of sunlight as possible.

While ultra violet rays burn superficially, they may burn deeply, such a burn must be treated with tannic acid solution, which forms a sterile coagulated protein. Heat brings blood and lymph to treated parts and softens the tissues, increases circulation and tissue metabolism has a curative effect on painful parts in cases of strain and rheumatism. One of the best methods of applying heat is by the paraffin wax bath, heated to 130°. The paraffin solidifies at skin temperature and forms a glove on the submerged part, which protects it from overheating, the vapour of sweat under the wax bath acting as an insulator. The result is a local steam bath, the part becoming flushed with blood and raised in temperature. The body temperature may be raised to 102° F by immersion of the legs above the knees. To chilblains, aching feet, and rheumatic joints the paraffin bath gives great relief.

Short Waves

Beyond the infra red is the high frequency radiation used in radio. The modern short-wave vacuum tube oscillator has allowed a study of electric waves as short as 1 metre, it is not as yet possible to generate any intensity of wave lengths less than this. Waves of 100–1 metre wave length or 3–3000 million cycles per second, and the living tissue put in the field between condenser plates, and so subjected to electrical stress, a displacement current results in which electrons in the molecules are stressed in one direction and then in another. Any free electrons also tend to pass from molecule to molecule forming a conduction current, and the molecules themselves, if bi-polar, tend to rotate in response to the changing potential of the field. The result is heating of the tissues. Artificial fever can be produced by putting the whole body, with exception of the head in the field of the high frequency current. The temperature may be raised to 105° F 60–80 mins. By so heating the body for some bacterial infection is destroyed. General paralysis of the insane has been treated successfully by this method in place of artificial production of malaria. Local heating can be produced by the local application of the electrodes—e.g., on either side of the face the temperature in the mouth thus being raised to 102–103° F an effect that cannot be produced by hot bottles placed on either cheek, or by ordinary diathermy. A local heating of the rectum can similarly be obtained. Small tumours grafted in the flanks of rats can be destroyed by the heating effect of the field, with some damage also to the skin. There is no evidence of any specific effect apart from heat, for heart, cilia, and muscle nerve preparations of the frog put in the field and kept cold suffer no change. If they are not kept cold they become affected by rising temperature, brought about by the high frequency field just as when heated by any other means. By intra pelvic diathermy heat treatment may be given with great advantage to certain cases.

of inflamed cervix or prostate especially in gonorrhoeal infection and backache and rheumatic troubles may also be relieved (Robinson 1920). In such cases the heat brings more blood and lymph to the treated part, and increases metabolic change and so produces a curative effect.

Natural Sources

Exposure to cold in open air treatment is effective in stimulating body metabolism and appetite. Still more so sea bathing for the resting metabolism may be increased by 50-100 per cent. in children exposed to the open air and 10 times while bathing in the sea. Cold stimulates the nervous system and drives the blood inwards while heat flushes the skin. Such to and fro changes promote health. It is of interest to note that sterility has been produced experimentally by keeping the testicles warm all the time. The breathing of cool air promotes evaporation from the respiratory membrane and stimulates secretion and the flow of blood, thus cleansing the membrane. The secretion of the membrane is a defence against infection. Cold air widens the breathing tube stimulates body activity and causes deep breathing which occasions a natural massage of the abdominal organs.

REFERENCES

- Crabtree, H. O. (1936) Imperial Cancer Research Fund Scientific Report.
 Cradock, V. (1945) *Ibid.*
 Howitt, F. J., Jan 2nd, 1937 p 10.
 Howitt, F. J., P. H. Williams, E. C. and Russ, S. *Ibid.* Jan. 30th, 1937, p 708.
 Robinson, C. A. (1920) *Ibid.* 1 1072.
 Sonne, (1911) *Acta med. scand.* p 102.

ADDISON'S DISEASE DUE TO SUPRARENAL ATROPHY WITH PREVIOUS THYROTOXICOSIS AND DEATH FROM HYPOGLYCAEMIA

By IAN A. ANDERSON, M.B. B.Sc. Aberd.

ASSISTANT IN MEDICINE, UNIVERSITY OF ABERDEEN AND

ALEXANDER LYALL, M.D. Aberd. M.R.C.P. Lond.

LECTURER IN CLINICAL CHEMISTRY IN THE UNIVERSITY

This patient, a single woman was first seen on August 28th 1920 when she was 30 years of age. At that time her history was that weakness, loss of weight, prominence of the eyes and swelling of the neck had developed during the last three years. She was a well developed woman (height 5 ft 4 in; weight 9 at 8 lb) presenting the characteristic signs of thyrotoxicosis. Her basal metabolic rate (B.M.R.) was +42 per cent. having confirmed this diagnosis by the following results:—

On Nov. 6th of the same year having had three exposures to X rays she weighed 10 at 3 lb and the tremors and vasomotor disturbances had disappeared but exophthalmos remained. The B.M.R. was now +18 per cent. On April 8th 1930 after two further exposures to X rays her improvement was maintained and the thyroid gland was no longer palpable. Her weight was now 10 at 4 lb and the B.M.R. +20 per cent.

She was not seen again until Jan 10th 1930. In the interval she had resumed her work as a typist and had remained in good health until 1935.

During the summer of that year she had become very sunburnt; the pigmentation did not fade subsequently but rather increased and in September she had a severe attack of colicky epigastric pain accompanied by vomiting and pain in the back and swelling of the eyelids. She returned to work however and between September 1935 and

January 1936 she felt quite well although she was rather easily tired and the pigmentation of the skin persisted.

In January 1936 she began to have attacks of pain and a sinking feeling in the stomach accompanied by nausea. These symptoms lasting for a few days at a time. She also developed an aversion to salt or food the least bit salty and was more sensitive to cold weather than before. When she was seen on Jan 10th the pigmentation of the skin was striking. It was brown in colour and present on the face lips backs of the hands areolae and axillae. She now weighed only 8 st but otherwise physical examination revealed no abnormality. The pulse rate was 68 the blood pressure 120/90 mm Hg and the B.M.R. -21 per cent. The blood chemical findings on this occasion were: blood urea 37 mg per 100 c.c.m. fasting blood-sugar 62 mg and plasma chloride (expressed as sodium chloride) 511 mg. The urinary chlorides in a sample taken at the same time as the blood sample were 480 mg.

A diagnosis of subthyroidism was made and also a tentative diagnosis of Addison's disease in view of the pigmentation, loss of weight, gastro-intestinal symptoms and slightly subnormal plasma chloride level. The patient was put on thyrodoxin siccum (B.P.) one-quarter of a grain daily the small dose being given in view of the sensitivity of patients with Addison's disease to thyroid extract. Her symptoms after a short remission became severe again and she was admitted to hospital on Feb 20th 1936 thyroid administration being stopped.

FIRST STAY IN HOSPITAL

The pigmentation had now become deeper, being present over the abdomen and in the skin creases of the palmar surface of the hands. Her weight was only 7 at 2 lb her pulse-rate was 104 and her blood pressure 88/61 mm Hg. Blood urea 40 mg per 100 c.c.m. fasting blood sugar 65 mg and plasma chlorides 526 mg.

As her symptoms were not considered of extreme urgency she was at first kept under observation with no special treatment the blood chemistry being examined daily. There was a slight improvement in subjective symptoms during the first five days after admission but the plasma chloride level declined slowly as is shown in the Figure.

On March 1st menstruation began, and the flow lasted for four days, no blood samples being taken during this time. On the 6th two days after the period had ceased the patient complained of nausea and began to vomit after meals. The plasma chlorides showed a further fall.

On March 9th her temperature rose to 101 F and she developed dull abdominal pain accompanied by tenderness but no rigidity. As the plasma chlorides had fallen to 470 mg per 100 c.c.m. the blood urea had risen to 67 mg and the blood pressure had fallen to 70/50 mm Hg treatment with suprarenal cortical extract was begun 5 c.c.m. of Supracort (Paines and Hyne) being injected intravenously twice daily. No intravenous saline were given at this time but an attempt was made to commence sodium chloride therapy by mouth. However the patient vomited salt given in formalised gelatin capsules and this treatment was abandoned temporarily after one day.

In spite of the hormone injections the plasma chloride continued to fall for three days being 438 mg per 100 c.c.m. on March 12th. The subjective symptoms improved however and the blood pressure had risen to 94/66 mm Hg by the 12th; the fall in plasma-chloride concentration for three days

A note on *Irelanda*—Chloride estimations were made on plasma throughout by the method of Van Slyke and Mendry (1923). Blood samples were collected with a 21 gauge needle under oil in small sample tubes which were practical & filled with blood; separation of plasma and analysis were performed at once. Blood urea and blood-sugar estimation was carried out by the method of Jellison.

after hormone therapy was probably due to dilution of the blood, following hemoconcentration during the crisis, although no confirmatory hæmatocrit estimations were made. That such dilution occurs after hormone therapy in suprarenal insufficiency is recognised from the work of Swingle and Piffner (1933), Harrop (1933, 1936), and Loeb (1933).

On March 13th the plasma chlorides had increased to 502 mg per 100 c cm and next day salt therapy was begun again, the patient taking 2 grammes of sodium chloride in a cup of water thrice daily. This method of giving salt caused much less nausea than the formolised gelatin capsules, a fact noted also by Kepler (1935) in recording the treatment of Addison's disease at the Mayo Clinic. Hormone injections were discontinued on March 14th, and the patient was now receiving 6 g of sodium chloride daily as the only special treatment. She was feeling very much better now, and was eating food with relish. As her plasma chlorides only just reached a normal level and began to decline again, the dose of sodium chloride was increased to 8 g daily, but this did not prove sufficient to raise the plasma chlorides to normal, and the dose was further increased to 10 g daily. The plasma chlorides quickly rose to normal on this second increase in the dose of salt and continued there during the rest of her stay in hospital, and the patient noted a definite improvement in her symptoms. Her strength and appetite both improved, and she was now able to walk round the ward. The cutaneous pigmentation decreased in intensity, and her weight, which had fallen 2 lb since admission, began to rise.

To test the observation made by Blankenhorn and Hayman (1935) that other sodium salts could be substituted for sodium chloride without detriment in the treatment of Addison's disease, on March 25th the patient was taken off sodium chloride alone, and given 4 g each of sodium acetate, sodium bicarbonate, and sodium chloride thrice daily, this being equivalent to 10 g of sodium chloride in sodium content. This treatment was continued for five days, during which the plasma chlorides fell slightly, but kept well within normal limits (see Figure) while the subjective condition remained unchanged, thus providing a confirmation of Blankenhorn and Hayman's work.

During her stay in hospital, the patient showed a strong tendency towards fasting hypoglycaemia. The fasting blood-sugar readings were —

Jan 19th	62 mg per 100 c cm
Feb 27th	65 " " "
" 29th	77 " " "
March 9th	113 " " "
" 10th	67 " " "

Radiography of the abdomen revealed no evidence of calcification of the adrenals. The lungs were radiologically normal, and there were no signs of tuberculous elsewhere in the body. The B M R on March 21st was -27 per cent. The patient was discharged on April 1st, having been given instructions to take 10 g of salt daily.

SECOND STAY IN HOSPITAL

About a fortnight after leaving hospital on April 1st the patient began to suffer from stiffness and later pain, in her knees, worst at night and in the morning. Otherwise her health was satisfactory and she took her salt regularly. During August and September she received thyroideum siccum (B P) gr 1 twice daily. She had no vomiting or abdominal pain, but her appetite deteriorated. On readmission on Oct 5th the pigmentation was somewhat lighter than before, the pulse rate was 84 and the blood pressure

105/78. Both knees were held in semiflexion, and movements were slow owing to spasm of the quadriceps and hamstring muscles. Coarse joint crepitus was felt on movement, which was painful. A radiogram showed typical early osteoarthritic changes in both knees, but it was agreed that the joint changes could not be held responsible for the extreme degree of spasm present. The patient had always been a difficult nursing case, but her irritability and intractability had now much increased.

On the morning of Oct 10th, five days after admission, she became drowsy and confused. The spasm of the leg muscles had increased, and the feet were held rigid in an inverted position with the toes hyperextended. This spasm spread to the arm muscles, masseters, sternomastoid, and respiratory muscles, it was tetanic, with occasional superimposed twitches. The patient was semiconscious, responding only to painful stimuli, and her systolic blood pressure was 65 mm Hg. No cortical extract was available, and 10 c cm of 10 per cent calcium levulinate solution had no effect on the spasm, which increased in intensity. The blood chemical findings, received about two hours after the first appearance of the spasm, were: blood urea 34 mg per 100 c cm, plasma chlorides 536 mg, blood-sugar, no reducing substance present. As the peripheral veins were so collapsed that intravenous injection was impossible, 100 c cm of 50 per cent glucose solution was administered by nasal catheter, and 8 minims of 1/1000 adrenaline solution injected intramuscularly. The patient, who was deeply comatose by this time, showed a dramatic response to this treatment. Within 25 minutes of receiving the glucose she regained consciousness and complained of great pain in her knees. Instructions were given to continue treatment with glucose and fluids by mouth. In the early afternoon she was able to talk to her relatives but later in the day she became drowsy and relapsed into coma. Adrenaline was injected without effect and she died that night.

POST-MORTEM EXAMINATION

There was atrophy of both suprarenal glands, with hyperplasia of the lymphoid tissue of the bowel, and to a less extent of the lymph nodes throughout the body.

Both suprarenal glands were reduced to small flattened pieces of tissue, the left gland measured only 40 by 22 by 17 mm. The capsule and superficial arteries were clearly seen. Microscopically, the glandular tissue had disappeared, and only a few scattered cortical cells remained. Some of these showed proliferative activity and contained two nuclei, while others were necrotic and undergoing degeneration. The reticulum of the medulla with its blood sinuses could still be made out, but only one or two medullary cells were seen. The place of the glandular tissue of cortex and medulla was taken by a small amount of fibrous tissue, which was heavily infiltrated with lymphocytes, amongst which there were a few macrophages and plasma cells.

The thyroid gland was of moderate size. Microscopically, it showed extensive degenerative changes, with accumulation of lymphoid tissue, an extensive fibrosis of the stroma and thickening of the walls of the blood vessels. Residual nodules of thyroid tissue remained, these being composed of small acini lined by a single row of cubical epithelial cells, many of which contained pyknotic nuclei and were in the process of degeneration. Most of the acini contained a small amount of deeply staining colloid. The liver showed fibrosis of many of the portal spaces, which contained giant cells, and were surrounded by a ring of lymphocytes. Some of the liver cells towards the central vein showed degeneration, and had pyknotic nuclei.

The parathyroid glands appeared normal.

Permission to examine the head was refused, so that the pituitary gland could not be examined.

Discussion

Cases of Addison's disease associated with thyrotoxicosis have only rarely been reported (Etienne 1910 Etienne and Richards 1926 and Chausfard and Girot 1926 and Brenner 1928-29). As in the present instance the symptoms of Addison's disease have usually followed those of thyrotoxicosis.

The thyroid gland often shows pathological changes in Addison's disease although such changes as are described show no uniformity. Crooke and Russell (1935) described evidence of increased thyroid

activity—tubular often branched tubular and rounded acini either empty or containing a little coagulum with lymphocytic infiltration. Brenner (1928-29) reported fibrosis and lymphocytic infiltration of the thyroid the parenchyma of which showed signs either of increased or of diminished activity—some times as much diminished as in myxoedema. He thought it probable that the changes in the thyroid were due to the same cause as the suprarenal lesion and not secondary to loss of suprarenal function.

As would be expected from the pathological changes in the thyroid the B.M.R. is often altered in Addison's disease. It is usually depressed—about -7 to -8 per cent according to Greene (1931). The case here recorded showed a depression (-27 per cent) as low as in a fully developed case of myxoedema, and the question arises whether the previous treatment of the thyroid with X rays had made it more susceptible to the degenerative changes which so often accompany Addison's disease.

Conversely it may be asked whether the degeneration of the suprarenal glands was in any way associated with the previous Graves' disease or with its treatment with X rays. There is some experimental evidence that the adrenal cortex inhibits the activity of the thyroid. Thus Marano and Baumann (1921) found that incomplete destruction of the suprarenal cortex in rabbits with intact thyroids—but not in

those with thyroids removed—cause a rise in body temperature and suggested that suprarenal insufficiency might be the cause of thyrotoxicosis. Koelsch (1934) showed that the suprarenal cortical hormones inhibited the stimulating effect of thyroxine on protein metabolism. On the other hand, evidence is lacking that destructive lesions of the thyroid affect the suprarenal cortex if they did, suprarenal insufficiency would have been more often observed in the large numbers of patients who have undergone thyroidectomy or radium or X ray treatment of the thyroid.

Apart from the association of thyroid disease with Addison's disease the clinical history of the patient during her first admission to hospital presented two other interesting features:—

(1) She had a strong distaste for salt or salty food and it was very difficult to make her take salt until she realised that it made her feel better. This contrasts with the reports of other observers. Thus Snell (1934) and Haussen (1936) both reported cases with a craving for salt.

(2) The crisis immediately followed a menstrual period. This relationship between menstruation and increased severity of symptoms in Addison's disease has been commented on by Weller (1936) one of whose patients had monthly attacks of vomiting at the time of expected but absent menstrual

periods. The increase in suprarenal insufficiency is presumably due to the added stress of the menstrual period which increases the need of the body for cortical hormone.

OBSERVATIONS ON CHLORIDE EXCRETION IN ADDISON'S DISEASE

In normal persons the excretion of chloride by the kidneys is so controlled by the requirements of the body that the concentration and the total amount of chloride in the plasma and tissues is maintained at a constant level. If the plasma concentration falls below normal the excretion of chloride in the urine falls to a negligible amount. This is well shown in a series of experiments by Altman (1929) in which the plasma-chloride concentrations of normal persons were reduced by placing them on a salt free diet and

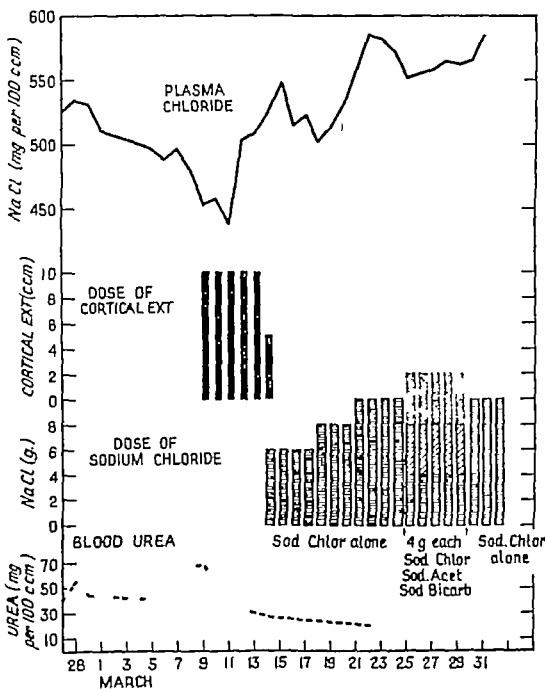


Chart showing chemical findings in relation to treatment (first admission)

encouraging chloride loss by water drinking and sweating. When the plasma chloride concentration fell below 555 mg of NaCl per 100 c cm the urinary excretion of chloride reached the approximately constant and negligible minimum of 5 mg NaCl per hour.

It is only rarely that the kidney excretes chloride in anything but minimal amounts at levels of chloride in the plasma below 530 mg per 100 c cm. Such an alteration in what is usually called the "chloride threshold" occurs in Addison's disease, and occasionally in diabetes mellitus and chronic nephritis. In the latter diseases urinary chloride excretion at subnormal plasma chloride levels, when it occurs, is probably due to pathological changes in the renal parenchyma. In Addison's disease this chloride loss is due to lack of the hormone of the suprarenal cortex, one of the functions of this hormone being the control of sodium metabolism and the distribution of body water (Harrop and Weinstein 1933, Harrop 1936, Loeb, Atchley, Benedict, and Leland 1933). In the absence of the hormone, there is a drainage of sodium, accompanied by chloride, from the body.

To demonstrate this loss of the power of the kidney to conserve chlorides in Addison's disease, observations were made on our patient during her first admission to hospital. On each occasion that a blood sample was taken for estimation of plasma chloride, she emptied her bladder fifteen minutes beforehand, and then passed urine just after the blood sample had been taken. The second specimen of urine was assumed to represent the urinary chloride excretion at the level of the plasma chloride found in the blood sample. As can be seen from the accompanying Table, urinary excretion of chloride continued for

While such a loss of chloride conserving power is not specific for Addison's disease, being sometimes found also in nephritis and diabetes mellitus, it may be of some value in the differential diagnosis of Addison's disease, especially in cases without pigmentation. In the absence of evidence of diabetes or renal disease, the finding of a chloride concentration in the urine of over, say, 200 mg per 100 c cm, when the plasma chloride concentration is below the minimal normal level of about 530 mg per 100 c cm, would strongly suggest the presence of Addison's disease.

SPONTANEOUS HYPOGLYCAEMIA IN ADDISON'S DISEASE

The striking terminal phenomena after the patient's second admission to hospital were the coma and generalised muscular spasm, associated with severe hypoglycaemia.

Similar symptoms in the course of Addison's disease have previously been reported. Thus, in the first of the cases reported by Weller (1936) there was drowsiness and spastic contraction of the right arm, which Weller associated with the hypoglycaemia noted in the patient during a previous admission to hospital. In the sixth of the cases reported by Hanssen (1936) there was an episode almost identical with the symptoms shown by our patient.

The patient, a woman of 47, with Addison's disease of tuberculous origin, became confused and maniacal, and developed paralysis of the right arm and a bilateral extensor plantar response. Blood sugar determinations made during the course of this episode showed values as low as 40 mg per 100 c cm, and the symptoms cleared up after the rectal administration of glucose. Hanssen suggested that the sudden death which sometimes occurs in Addison's disease, with no haemoconcentration or other blood chemical findings characteristic of crisis, might be due to spontaneous hypoglycaemia.

Investigation of suprarenalectomised animals has shown that, in certain species at least, removal of the suprarenal glands causes a profound disturbance in carbohydrate metabolism. Britton and Silvette (1932) have demonstrated that in the guinea pig and cat suprarenal insufficiency is accompanied by reduction in liver glycogen and blood sugar, and that animals dying of suprarenal insufficiency show convulsive seizures similar to those observed in insulin hypoglycaemia. These authors consider that the convulsions are related to the hypoglycaemia, which, in their opinion, is the immediate cause of death. Similarly, Harrop and others (1935) have shown that in suprarenalectomised dogs, maintained either with cortical hormone or with salt, fasting produces weakness and coma, associated with extreme hypoglycaemia, but with no fall in plasma sodium or chlorides and no rise in blood non protein nitrogen, and that glucose injection rapidly relieves the symptoms.

Recent work (Britton and Silvette 1934, Buell, Anderson, and Strauss 1936) has shown that animals suffering from suprarenal insufficiency have lost the ability to form liver glycogen from injected glucose or sodium lactate. The weight of evidence therefore suggests that the suprarenalectomised animal develops hypoglycaemia because it cannot form liver glycogen as a store to maintain its blood sugar level. Since anorexia is common in Addison's disease, the failure to form liver glycogen from endogenous sources may well be the cause of the hypoglycaemia so often noted in this disease, and may explain the occurrence of coma in the absence of any changes in blood volume or plasma electrolytes.

In our patient, the plasma chlorides and blood urea were both within normal limits at the time

CASE OF ADDISON'S DISEASE

Plasma chlorides		Urinary chlorides		Plasma chlorides		Urinary chlorides	
(mg NaCl per 100 c cm)				(mg NaCl per 100 c cm)			
Feb 28th	534		300	Mar 7th	406		470
" 29th	531		360	" 8th	479		310
Mar 1st	511		200	" 9th	452		270
" 5th	490		700	" 11th	438		200
" 6th	488		880	" 12th	502		210

TWO CASES OF INTESTINAL OBSTRUCTION

Plasma chlorides		Urinary chlorides		Plasma chlorides		Urinary chlorides	
(mg NaCl per 100 c cm)				(mg NaCl per 100 c cm)			
Pre-operative	467		Nil	Pre-operative	470		67
After operation—				After operation—			
12 hrs	467		Nil	12 hrs	455		60
24 "	455		20	"	475		20
2 days	467		20	"	455		16
3 "	452		100	3 "	528		154
4 "	450		37	4 "	507		382
5 "	496		29				
7 "	450		233				
8 "	613		672				
9 "	580		440				

several days after the plasma chloride concentration had fallen well below the usually accepted minimal normal level of about 530 mg per 100 c cm.

As a contrast to this case similar observations were made on a series of cases with high intestinal obstruction vomiting and hypochloraemia. In both cases presented in the Table the urinary chloride concentration during the period of hypochloraemia was very low below 100 mg per 100 c cm. As soon as the plasma chloride concentration rose to above 530–540 mg chloride appeared in the urine in normal amounts confirming the observations of Aitken (1929) mentioned previously.

of the terminal symptoms and thus two of the characteristic blood chemical findings of an Addisonian crisis were lacking. On the other hand, there was extreme hypoglycaemia and we hold that the coma and muscular spasm can be directly related to the hypoglycaemia. Although serum calcium and plasma alkaline reserve determinations were not carried out the muscular spasm was obviously not of the nature of tetany since it was unrelieved by calcium injection and the dramatic recovery of consciousness and the disappearance of the spasm after the administration of glucose and adrenalin made the diagnosis of hypoglycaemia certain.

It is less certain whether the fatal termination in spite of glucose treatment can be attributed to hypoglycaemia but Rabinovitch and Barden (1932) have reported a case which seems to make this opinion at least tenable. Their patient a youth of 17 suffered from spontaneous hypoglycaemia due to replacement of the suprarenal medulla by lymphoid tissue. He developed coma and spastic contraction of the right arm with a blood-sugar concentration of 25 mg per 100 c.c.m. Recovery of consciousness followed continuous intravenous glucose infusion but the blood-sugar remained low despite this treatment, and he finally relapsed into coma and died. In this case the suprarenal cortex was comparatively undamaged so that Addisonian crisis can be excluded as the cause of death.

Summary

A case of Addison's disease due to suprarenal atrophy and preceded by thyrotoxicosis is described. Death occurred in hypoglycaemia.

It is suggested that simultaneous determinations of the plasma chloride and urinary chloride concentrations are of value in the diagnosis of early cases of Addison's disease.

We are indebted to Prof. Stanley Davidson for permission to publish this case and to Dr. William Davidson for the post-mortem report.

REFERENCES

- Attkin, R. S. (1929) *J. Physiol.* 67, 190.
 Blankenhorn, M. A. and Hayman, J. M. (1935) *Amer. J. med.* 2, 159, 410.
 Brenner, C. H. (1928-29) *Quart. J. Med.* 22, 131.
 Britton, S. W. and Silvette, H. (1932) *Amer. J. Physiol.* 100, 701.
 — (1933) *Ibid.* 107, 100.
 Buell, M. V., Anderson, I. A. and Strauss, M. B. (1930) *Ibid.* 114, 1.
 Chaffard, A. and Gilrot, L. (1925) quoted by Rolleston, D. S. Crooke, A. G. and Russell, D. S. (1935) *J. Path. Bact.* 40, 5.
 Etienne, G. (1910) Etienne, G. and Richards, G. (1920) *quod* by Rolleston.
 Graessner, C. H. (1931) *Proc. Mayo Clin.* 6, 395.
 Hancock, P. (1930) *Intern. med.* 89, 420.
 Harrop, G. A. (1935) *Ill. Johns Hopk. Hosp.* 89, 25.
 —, Bonfer, L. J., Nichols, W. M., and Strauss, M. B. (1935) *J. exp. Med.* 61, 833.
 — and Weinstein, A. (1933) *Ibid.* 57, 305.
 Kepner, E. J. (1935) *Arch. intern. Med.* 56, 103.
 Koebe, G. A. (1931) *Proc. Mayo Clin.* 6, 55.
 Koch, R., Atchler, D. W., Benedict, F. M. and Leland, J. (1933) *J. exp. Med.* 57, 175.
 Marine, D. and Baumann, F. J. (1931) *Amer. J. Physiol.* 57, 133.
 Rabinovitch, J. and Barden, E. W. (1932) *Amer. J. med. Sci.* 184, 481.
 Rolleston, H. D. (1930) *The Endocrine Glands in Health and Disease*. London.
 — and M. A. (1931) *Proc. Mayo Clin.* 6, 393.
 Svinge, W. W., Wagner, J. J., Vard, H. W. and Parkins, W. M. (1933) *Science* 77, 54.
 Welke, L. L. (1936) *Arch. intern. Med.* 77, 215.

TORREY HOSPITAL.—Eight acres of land on the western side of this hospital have been purchased. Accommodation is being provided for another 22 patients and a public appeal for the funds has brought in enough to liquidate the amount due to the contractor. About £6000 has been obtained from the contributory association. The out-patient attendance reached 36,718 over 10,000 more than in the previous year.

TREATMENT OF URINARY INFECTION THE IMPORTANCE OF DIETARY CONTROL

By HERBERT I. COOMBS B.Sc. Oxon. Ph.D. Camb.
M.D. Harvard

CHARLES H. CATLIN M.B. Birm. D.A.

AND

DOROTHY READER M.B. Birm.

(From the Biochemical Laboratory, The Queen's Hospital, Birmingham)

MANY of the methods of treating urinary infection have necessitated some control over the reaction of the urine. A satisfactory degree of alkalinity can usually be produced by the administration of sodium bicarbonate or potassium citrate provided adequate dosage is employed but acidification has always been much more difficult to achieve. Control of the acidity of the urine became important with the introduction of the use of hexamine but strict control has only been attempted since the adoption of the ketogenic diet and mandelic acid treatment.

When hexamine was first used the somewhat obvious agent acid sodium phosphate was generally employed to acidify the urine and this drug has had a wide vogue ever since. Some doubts however were cast on its efficacy as early as 1913 (Henderson and Palmer) and since the work of Haldane (1921) the administration of ammonium salts such as the chloride nitrate or more recently phosphate has gained favour.

Diet apart from drugs also markedly influences the reaction of the urine and can if suitably arranged nullify or reinforce the action of drugs.

KETOGENIC DIET

In 1931 Clark investigated the effects of giving patients a diet containing a large quantity of fat but the minimum of carbohydrate. This lack of carbohydrate causes incomplete combustion of the fat, with the result that certain acids of which β -hydroxybutyric acid is the most important appear in the urine. These acids fulfil two purposes: they make the urine acid and they act as bactericidal agents.

Very satisfactory results were obtained by this method but the diet is extremely unpleasant and many patients have difficulty in tolerating it. In order to eliminate the troublesome dietetic regime attempts were made to administer the β -hydroxybutyric acid by mouth but it was found as expected that it is completely oxidised in the body and does not appear in the urine. Rosenheim (1935) however discovered in mandelic acid an excellent substitute which can be given by mouth and yet escape oxidation and appear in the urine in sufficient quantity to be effective. With this drug the need for a low pH still exists and it is probable that many failures of mandelic acid treatment are due to the inadequate acidification of the urine. Some investigators have thought that a modified ketogenic diet might serve to lower the pH of the urine sufficiently for the mandelic acid to be effective. Actually unless this type of diet is imposed with the utmost rigour and care it has no effect whatever on the reaction of the urine (even comparatively slight variations from the strict regime rendering it entirely valueless).

OTHER DIETARY MEASURES

There are fortunately other dietetic methods of changing the reaction of the urine which are easily tolerated.

For the past thirty years considerable knowledge of the mineral content of foods has been available but seems to have been given little practical application. Nearly all foods contain acid- or alkali-producing elements in varying proportions, so that after oxidation there remains an ash having a preponderance of acidity or alkalinity. Sherman and Gettler (1912) investigated the composition of many foods and, by estimating the sodium, potassium, calcium, magnesium, sulphur, phosphorus, and chlorine content, were able to calculate the excess of acidic or alkaline radicals present (see Table).

Table showing Acid base Balance of Foods

Equivalent acid or alkali per 100 grammes edible foodstuff

ALKALI PRODUCING FOODS

Foodstuff	Normal alkali (c.cm.)	Foodstuff	Normal alkali (c.cm.)
Almonds	11.3	Horse radish	5.5
Apples	3.4	Jelly	3.6
Apricots	7.2	Leeks	7.1
Asparagus	1.3	Lemons	4.8
Bananas	8.4	Lemon juice	4.6
Beans dried	11.7	Lettuce	7.7
" fresh string	5.6	Limes	11.5
Beets	11.1	Maple syrup	12.5
Blackberries	3.5	Milk cow's whole	1.8
Cabbage	4.3	" skimmed	1.7
Cabbage greens	2.8	" condensed	4.3
Cantaloupe	15.2	" goat's	5.9
Carrots	10.9	" human	0.8
Cauliflower	5.3	Molasses	31.0
Celery	8.7	Mushrooms	2.4
Cherries red	5.6	Musk melon	7.5
Chestnuts	12.6	Olives	48.0
Chocolate	7.0	Oranges	0.1
Cider	3.5	Orange juice	5.7
Citron	9.9	Parsnips	11.4
Cocoa	5.7	Peaches fresh	5.8
Coconut dried	2.3	Pears	3.1
" fresh	2.2	Peas dried	3.7
Cream	1.4	Pineapple	6.9
Cucumber	1.3	Potatoes	8.2
Currants dried	10.6	Pumpkin	1.5
" fresh	4.0	Radishes	4.7
Currant juice	5.3	Raisins	22.8
Dandelion	18.8	Rhubarb	0.2
Dates	12.6	Splanch	22.9
Fadive	11.4	Strawberries	6.7
Figs, dried	28.4	Tomatoes	5.3
" fresh	9.4	Turnips	7.5
Grape fruit	4.1	Turnip tops	18.9
Grape juice	2.9	Watercress	11.3
Grapes	3.8	Water melon	2.2
Hazel nuts	5.4	Whey	2.4
Honey	0.5	Wine average	2.1

Jams have approximately two thirds the values of the corresponding fruits

ACID PRODUCING FOODS

Barley, pearl	5.1	Meat—	
Bread white	0.6	Bacon	7.8
" wholemeal	6.8	Beef	10.0
Cake plain	4.3	Chicken	10.7
Cheese	7.6	Ham, boiled	10.0
Clams, round	4.1	" medium fat	8.4
" soft long	0.0	" medium	
Cornflakes	5.4	" smoked	8.3
Corn (maize) sweet	2.3	" smoked	9.6
Crackers	9.6	Liver	10.0
Doughnuts	7.3	Pork lean	10.0
Egg white	6.3	Veal	10.8
" whole	12.7	Meat peptone	0.6
" yolk	32.6	Mustard	57.0
Fish—		Oatmeal	10.3
Cod salt	12.7	Oysters	10.5
Haddock	5.5	Peanuts	4.1
Hallbut	9.3	Rice brown	0.3
Herring smoked	10.0	" puffed	0.0
Mackerel	9.3	" white	0.0
Salmon fresh	11.0	Spaghetti	9.7
" tinned	10.7	Walnuts	7.8
Sardines	11.3	Wheat bran	10.5
Smelts	8.7	" germ	19.3
Flour white	11.1	" puffed	11.0
" wholemeal	11.1	" shredded	12.2
Lentils dried	8.2	" whole	13.3
Macaroni	14.3		

Cranberries plums prunes

NEUTRAL FOODS

Butter, cornflour, fresh peas lard onions, sugar, tapioca, vegetable oils

The above Table is compiled from several sources but is calculated almost entirely from the sodium, potassium,

magnesium, calcium, sulphur, phosphorus, and chlorine figures given recently by Sherman (1932)

Their results were expressed in terms of the number of cubic centimetres of normal acid or alkali available from 100 grammes of each food. The residue resulting from oxidation within the body is excreted by the kidneys and intestine, and thus tends to influence the reaction of the urine. With most foods the effect on the urine is exactly as the ash analyses would lead us to expect, but a few fruits—i.e., plums, prunes, and cranberries—act as acid producers in the body in spite of yielding an alkaline ash. This apparent anomaly is explained by the fact that these fruits contain appreciable quantities of benzoic acid which escapes oxidation in the body and is excreted in the urine in conjugation with glycine as hippuric acid.

METHODS OF INVESTIGATION

A number of healthy men and women were placed on acidogenic and alkalogenic diets similar to those shown herewith.

ACIDOGENIC DIET

Breakfast—Porridge or cereal with sugar and cream. Bacon and egg, bacon and kidney, or fish. Bread and butter.

Lunch—Meat, chicken, or fish, or omelette (cheese or savoury). Stewed prunes and cream. Bread and butter. Cheese and biscuits.

Tea—Minimum of tea with sugar and cream. Bread or toast with butter, or egg or sardine sandwiches.

Supper—Meat or fish or cheese. Bread and butter. Walnuts. Minimum of coffee with cream and sugar.

ALKALOGENIC DIET

Breakfast—Half grape fruit or orange with sugar. Mushrooms and tomatoes on minimum of toast. Mixed fruit—dates, apples, or bananas. Tea with milk and sugar.

Midmorning—Glass of milk with apple or banana.

Lunch—Vegetable soup (celery, tomato, parsnips, turnips, onions, &c., but no meat stock, barley, or lentils). Green salad (tomato, cress, lettuce, cucumber, celery). Date and almond salad, baked apple, stewed fruit and junket, or raw fruit.

Tea—Tea with milk and sugar. Green salad raw vegetable salad or fruit salad. Minimum of bread and butter.

Supper—Vegetables en casserole (onions, carrots, turnips, tomatoes, &c.) Potatoes. Stewed fruit and cornflour mould, raw fruit or almonds and raisins. Coffee with milk and sugar. Golden syrup may be taken with any meal.

The urine was collected at two hourly intervals throughout the day and the pH of each specimen determined colorimetrically with as little delay as possible. The essential features of the acidogenic diet are the inclusion of meats, fish, bread, cereals, cheese, butter, and eggs, with plums, prunes, and cranberries as dessert. All of these foods have a comparatively low water content so that it was easy to arrange that subjects on this diet had a low urinary output. On the other hand the main articles of food in the alkalogenic diet—namely, potatoes, milk, fruit, and vegetables—all contain a large quantity of water and this makes it somewhat difficult to ensure a very low urinary output. Fortunately, as explained below, this is not of great consequence.

RESULTS

The results of an experiment on a healthy male are given herewith (Fig. 1) and similar results were obtained with several other individuals.

It will be seen that a normal person can render his urine relatively alkaline or markedly acid merely

by suitable selection of his food. It is clear that the attainment of an acid urine by the administration of drugs would be far more difficult in a person on a vegetarian diet than in one on a mixed diet. In order to test this point further the urine of individuals on an alkalogenic diet was collected and sufficient normal hydrochloric acid added to each sample to bring the pH to 5.3. On the average the total volume required to be added to the 24 hours output of urine was about 75 c.c. which is equivalent to the daily dose of ammonium chloride usually prescribed—namely 4 grammes. It can thus be seen that in a patient eating a vegetarian diet this dose will only be effective in producing a highly acid urine under ideal conditions. As shown in Fig. 1 however it is possible to maintain the reaction of the urine below 5.3 by diet alone. If drugs are used the diet will reinforce their effect.

Experiments were carried out to ascertain the effect of the ingestion of various amounts of water on the reaction of the urine. It was found that dilution of urine with distilled water *in vitro* has very little effect on the pH. Urine of pH 5 even when diluted tenfold which is far outside usual physiological limits generally changes to pH 5.2. Moreover in the experiment shown in Fig. 1 the subject restricted his fluid intake during all days on the acidogenic diet with the exception of Nov. 3rd. On this day large quantities of fluid were taken but it will be seen that the effect on the reaction of the urine is not very great. Even this small decrease of acidity is of importance however and patients on an acidogenic diet should restrict their fluid intake as much as possible not only to achieve the maximum acidity but more important to keep the urinary concentration of mandelic acid, or other antiseptic which may be prescribed as high as possible. When alkaline drugs are being administered the small

PRACTICAL APPLICATION

The above facts were demonstrated on several patients. Allowing them their own selection of diet and placing no restriction on acid fruits

such as oranges and lemons it was found that the average pH of the urine was 5.5 or even 6 under the usual dosage of mandelic acid preparations. On correcting the diet the pH could be maintained below 5.3. These facts are illustrated by the following case.

An otherwise healthy male aged 22 years complained of severe pain in the right loin. During the next fortnight he suffered intermittently from this pain and had a widely swinging temperature. He then passed a small stone and noticed that his urine was cloudy. Alkali was administered for the next month but without effect. He was referred to hospital and placed on the usual dosage of a well known preparation of mandelic acid containing phosphates as an acidifying agent. During the next ten days it was noticed that the average reaction of the urine was about 5.8. On the tenth day of his stay in hospital the urine was collected at three hourly intervals throughout the day and night. On the eleventh and subsequent days the patient was given an acidogenic diet. No other alteration was made in the treatment and the satisfactory change of the reaction of the urine is shown in Fig. 2.

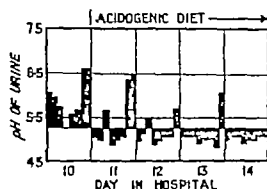


FIG. 2.—The effect of an acidogenic diet on the urine of a patient receiving mandelic acid. Before the diet the average pH was 5.8. Each day began at noon just before lunch. Up to and including the tenth day in hospital the patient selected his own diet. On the following days an acidogenic diet was given.

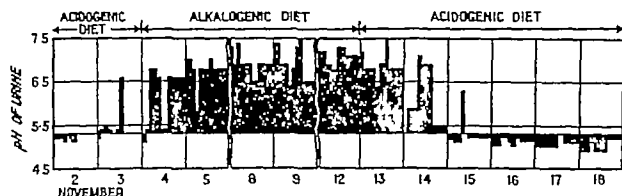


FIG. 1.—Effect of acidogenic and alkalogenic diets on the urine of a healthy male. Each day began at 8 A.M. Just before breakfast. Several days are omitted from the complete experiment for reasons of space. A line is drawn at pH 5.3 and reactions above and below this line are shaded. On all days when an acidogenic diet was taken fluid was restricted except on Nov. 3rd when large quantities of fluids were taken. The effect of slightly raising the pH. It will be noticed that about 40 hours of an acidogenic diet were required on Nov. 13th and 14th to "wash out" the effect of the previous ten days' alkaline diet. After this the pH of the urine did not rise above 5.3 except for 4 hours on Nov. 15th when it rose to 6.3.

effect of dilution on the reaction of the urine can be disregarded as clinical experience seems to show that a marked diuresis is essential in the treatment of cases in which these drugs are used.

It will be noticed that there is very little evidence of acid or alkaline tides in the above results, but on some occasions unexplained variations of pH occurred at approximately similar times of the day. These variations were probably connected with the habits of the individual. There is no doubt that the usual acid or alkaline tides must be dependent to a great extent on the activity of the individual the times at which meals are taken and especially on the nature and quantity of the food ingested.

The above results show that the reaction of the urine can be much influenced by the diet both in normal persons and in patients suffering from urinary tract infections. It would seem expedient therefore to adjust the diet in all cases where the maintenance of an acid or alkaline urine is of importance. In many cases this control of the diet need not be rigid slight modifications which are hardly noticed by the patient often being sufficient. It has been found that a strict alkalogenic diet can be taken for long periods without inconvenience. A strict acidogenic diet however may sometimes result in slight gastric discomfort but this together with the slight dyspnoea which often occurs may be a manifestation of the acidosis and therefore inevitable.

SUMMARY

- (1) Urine can be rendered and maintained relatively alkaline or highly acid by administration of the compound of alkali or of acid producing foods.
- (2) Modification of diet for this purpose are of an useful in the treatment of urinary tract infection.

(3) A table of acid and alkali producing foods is presented

REFERENCES

- Clark A L (1931) *Proc Mayo Clin* 6, 605
 Haldane J B S (1921) *J Physiol* 55, 265
 Henderson, L J, and Palmer W W (1913) *J Biol Chem* 14, 81
 Rosenheim V L (1935) *Lancet* 1 1032
 Sherman, H C (1932) *Chemistry of Food and Nutrition*, 4th ed., New York
 — and Gettler, A O (1912) *J Biol Chem* 11, 323

JAUNDICE COMPLICATING PNEUMONIA

WITH SPECIAL REFERENCE TO JAUNDICE WITH
CHOLEMIA AND ITS TREATMENT

By C ALLAN BIRCH, M D Liverp.,
M R C P Lond., D C H., D P H.

SENIOR PHYSICIAN, NORTH MIDDLESEX COUNTY HOSPITAL

JAUNDICE is not a common complication of pneumonia. Amongst 800 cases of lobar pneumonia and broncho pneumonia in the last three years at the North Middlesex County Hospital only 2 were recorded in which severe jaundice was thought to be a direct complication of pneumonia. One is described in this paper and in the other the patient died shortly after admission. A slight icteric tinge is seen more often, and Elton (1931) has shown that latent jaundice as manifested by the van den Bergh reaction is almost constant in pneumonia.

Many workers have investigated the cause of jaundice complicating pneumonia. Preti (1932) concludes that in pneumonia bilirubin may be formed in the lung itself and by entering the circulation may give rise to clinical jaundice. Chierici's (1932) findings, too, suggest that during the stage of red hepatisation bilirubin is formed outside the liver in the pneumonic focus. Mangeri (1931) was able to increase the bilirubin content of the blood in animals by injections of blood into the air passages. Bruni (1929) thinks that jaundice in pneumonia should be classified as secondary acquired hemolytic jaundice. Pisani (1930) concludes from a study of 9 cases of visible jaundice in a series of 54 cases of pneumonia that jaundice can be caused by toxic damage to the liver parenchyma, by venous stasis in the liver and by increased hemolysis and also by angiocholitis due to penetration of pneumococci to the bile ducts. Cases of jaundice due to the last cause have been recorded by Lemierre and Abram (1910) and by Ardm Deltel (1909). Jaundice may also be due to causes unassociated with pneumonia and, indeed, a case has been recorded (Lambert and Secretan 1932) in which it followed pneumonia and was due to an aneurysm of the hepatic artery pressing on the common bile duct. Harris (1927) using dye tests showed that high temperature itself did not influence liver function and concluded that liver insufficiency in pneumococcal pneumonia was due to an accompanying toxæmia which damaged the liver. There was no alteration in liver function in advanced phthisis indicating that structural changes in the lungs did not play a part in producing liver inefficiency.

Anyone who sees many cases of pneumonia knows that cases with jaundice fall into two clinical groups—first, those in which the jaundice is slight and of no particular importance, and secondly, those in which it may herald a fatal issue. In a recent paper Coope, Osborn and Pygott (1936) concluded that while some patients with pneumonia could suffer

some liver damage and yet survive, nevertheless an increase of bile in the blood stream did indicate a disturbance of liver function with a worse prognosis. Alexander (1927) says—

"A slight degree of jaundice often exists and is of no particular importance. When jaundice is marked it has been stated by many observers that it indicates a bad prognosis. It is usually due to a duodenal catarrh leading to obstruction of the bile duct, but it is possible that in some of the most severe cases the jaundice is dependent upon the hæmolytic action of the pneumococcus. Unfortunately very little treatment is available in the latter type of jaundice."

In the present paper I am concerned chiefly with jaundice of serious nature. Such cases are recognised clinically by the associated symptoms of cholemia and not by any special laboratory test. The clinical picture of cholemia is not very clearly defined in pneumonia since it is complicated by the symptoms of the causal condition.

In diseases primarily affecting the liver such as acute necrosis the first symptom of cholemia or failure of liver function is usually intense malaise. The patient is irritable and later apathetic. His skin is dry and muddy. The pulse rate rises and there may be slight pyrexia, then anorexia, vomiting, jaundice, and constipation appear. In the final stage the patient is incoherent and delirious and has a subnormal temperature. Convulsions may occur. Sometimes there is air hunger from acidosis, and also diarrhoea and tympanites. Leucine and tyrosine crystals may be found in the urine after alkalisation. Hæmatemesis may occur, and the general hæmorrhagic tendency associated with acute destruction of liver tissue has been called "pseudo hæmophilia hepatica" (Whitby and Britton 1935).

PATHOLOGY

It is well known that the liver is susceptible to many toxins and that its cells are very prone to show necrosis. In acute infectious diseases such as pneumonia cloudy swelling is an early change. In severe infections including pneumonia actual necrosis of liver cells occurs. Hurst and Simpson (1934) described a boy suffering from a myopathy who died of broncho pneumonia complicated by jaundice. The histological changes in the liver were cloudy swelling and slight fatty changes, and in addition parietal zonal necrosis showing swollen granular cells containing karyolytic and pyknotic nuclei. Autolytic changes occur rapidly in the liver after death but in some cases of uncomplicated pneumonia in which it was possible to examine the liver within a few hours of death and in which autolytic changes were minimal definite necrotic changes were found. When severe jaundice complicates pneumonia therefore we may assume that some hepatic necrosis is present.

TREATMENT

Although the outlook in cases of cholemia is usually considered to be hopeless I think that there is reason for not adopting a fatalistic outlook. Under treatment recovery may occur and the essential points in such treatment are the administration of glucose, insulin and calcium, plus measures to combat circulatory failure.

Glucose—The administration of glucose in liver disease is a well established form of treatment, since it is known that the liver parenchyma is protected, if incompletely, from the action of toxins when it contains a good store of glycogen. Davis and Whipple (1919) proved that the immediate nutritional state influenced the effect of potential liver poisons by

showing that the destructive action of chloroform on the liver was intensified by previously with holding food. Newman (1928) showed that a series of cases in which jaundice followed chloroform administration had all been prepared for operation by starving and purging.

In order to protect the liver glucose should be given in large doses. Satke (1933) recommends up to 100 c.cm. of a 10 to 20 per cent. solution of dextrose intravenously but even this amount would seem to be too small. Some idea of the amount required may be obtained from the experiments of Mann and Magath (1922). These workers showed that dogs after complete hepatectomy developed twitchings and other evidence of hypoglycaemia which could be relieved by the injection of glucose at the rate of 0.25 g. per kg. body weight per hour. A patient with severe cholemia is comparable to a dehepatised animal and if he weighed 70 kg. he would need on the basis of 0.25 g. per kg. per hour 620 grammes of glucose in 24 hours.

If the patient is able to swallow it is easy to administer large amounts of sugar by mouth in the form of fruit drinks and barley sugar. It is difficult to give much glucose by the rectum since solutions which are hypertonic—i.e. stronger than 5 per cent.—are absorbed with difficulty and cause irritation. In very ill patients glucose must be given parenterally and this is best done by the intravenous injection of a 30 per cent. solution warmed to body temperature. If pure dextrose is dissolved in distilled water and autoclaved for twenty minutes it can be given quite safely by the intravenous route. It is true that such a solution has been used to cause thrombosis of varicose veins but there is no danger of thrombosis in the arm if some normal saline is injected before removing the needle. In the case described below no symptoms occurred which could be attributed to lowering of intracranial tension by the hypertonic glucose.

Dextrose given intravenously immediately raises the blood sugar above the renal threshold and hence some dextrose is lost in the urine. MacLachlan, Kastlin and Lynch (1932) found that patients with acute lobar pneumonia could be given 25 per cent. glucose in normal saline continuously by the intravenous method and that it was utilized at the rate of 50–60 g. per hour. If it was given slowly enough no glucose appeared in the urine. Incidentally the above workers concluded that glucose was of no value in the treatment of pneumonia and if this is true any good effects in cases of pneumonia with jaundice must be ascribed to its ability to combat the liver condition.

Wilder and Sansum (1917) found that if glucose was given intravenously at a rate more rapid than 0.35 g. per pound body weight per hour some was excreted in the urine. This would allow a ten-stone man about 166 c.cm. of 30 per cent. glucose per hour. This slow rate of injection is not always practicable and I have found that in normal persons not more than 5 g. of a total amount of 50 g. in 30 per cent. watery solution given intravenously at a rapid rate are lost in this way. More is probably lost in patients with liver disease but not sufficient to vitiate this form of administration.

Insulin.—Experimental work concerning the effect of insulin on the carbohydrate metabolism of the liver is somewhat contradictory. It seems probable, however, that insulin favours the storage of glycogen in the liver when plenty of dextrose is available. It has been shown that glycogen will accumulate in the livers of dehepatised dogs but that the rate of glycogen formation is greatly accelerated if insulin

is given and it is probable that the deposition of liver glycogen is in large part due to the action of insulin. Umber (1922) used insulin and glucose in 38 cases of subacute yellow atrophy with 4 deaths. In one case a biopsy of the liver was performed and showed swollen pale granular liver cells containing bile-pigment and fat globules in the Kupffer cells. Icterus was severe and death seemed imminent. Thirty units of insulin twice a day and a rich carbohydrate diet were followed by a cure.

Calcium.—Milot and Cutler (1929) were able to produce acute hepatic insufficiency in dogs by the administration of carbon tetrachloride and the toxic manifestations shown by the animals closely resembled those of cholemia in human beings. They also showed that dogs could be protected against the effect of carbon tetrachloride by the administration of calcium and also that dogs with early symptoms could be cured by calcium therapy. They concluded that, while it was improbable that the pathological lesions caused by the continued action of hepatic poisons could be prevented by calcium, acute hepatic intoxication was unquestionably beneficially influenced by calcium. Cantarow (1933) says he has used calcium therapy in two patients with subacute yellow atrophy with brilliant and dramatic results. He recommends 10 c.cm. of 10 per cent. calcium gluconate intravenously. The following are the details of a case of cholemia complicating lobar pneumonia treated by glucose, insulin and calcium. The rarity of the condition and consequent lack of opportunity for further trial prompts me to record the details of treatment of a single case.

CASE RECORD

A man aged 44, a taxi-driver by occupation was admitted to hospital on Dec. 9th 1933 having been ill for four days with chills and pains in the left chest. Temp. 100 F., respirations, 32, pulse rate 120; blood pressure 160/80. Pleural friction heard in the left axilla and ample evidence of consolidation at both bases. On the 10th 300 c.cm. of air was injected into the left pleural cavity with rapid relief of pain. On the 12th slight jaundice appeared. He was given 250 c.cm. of 30 per cent. glucose and 50 units insulin intravenously. On the 13th he was deeply jaundiced. The temperature had fallen to 98 F. by lysis. The pulse rate was about 110 and regular. Blood pressure 110/60. The heart sounds were distant. There was no evidence of fluid in the pleural sacs. He was in a state of constant delirium. The van den Bergh reaction was prompt direct positive. Bile-pigment and salts were present in the urine and the faeces were coloured. Another intravenous injection of 250 c.cm. of 30 per cent. glucose and 50 units insulin was given.

On Dec. 14th he appeared moribund. He vomit a little and was comatose. The general appearance and odour were those usually associated with drug patient. The odour may have been the fetor hepatis described by the old clinicians. On this day he received two intravenous injections of 500 c.cm. of 30 per cent. glucose with 100 units insulin and 10 c.cm. of 10 per cent. calcium gluconate intravenously. He also had five intramuscular injections of 17 c.cm. Coramine. On the 15th he seemed a little better though jaundice was still marked and he was comatose for long periods. At 2.30 p.m. he received 250 c.cm. of 30 per cent. glucose and 50 units insulin intravenously and at 10.30 p.m. 40 c.cm. of 30 per cent. glucose and 50 units insulin and 10 c.cm. of 10 per cent. calcium gluconate intravenously.

On Dec. 16th he was much delirated and showed evidence of circulatory failure and was given 500 c.cm. of 5 per cent. glucose in saline from a Crookes ampoule. At 8 p.m. 400 c.cm. of 30 per cent. glucose and 50 units insulin were given intravenously. He was extremely drowsy and seemed to be dying. Sugar was present in the urine. On the 17th he received a total of 1000 c.cm.

of 30 per cent glucose and 120 units insulin intravenously. On the 18th he seemed better and again received intravenous injection 600 c cm of 30 per cent glucose and 200 units insulin. On the 19th he was able to take 500 c cm of 30 per cent glucose diluted in lemonade by mouth during the day. On the 20th he refused 30 per cent glucose by mouth but took about 500 c cm of a 10 per cent solution of glucose in 0.5 per cent sodium chloride iced and flavoured with lemon juice. He was also given 420 c cm of 30 per cent glucose and 100 units insulin intravenously.

On Dec 21st he was given 360 c cm of 30 per cent glucose and 100 units insulin intravenously. By this time he was very much improved and no further intravenous injections were given. He was able to take small amounts of food by mouth. He was seriously dehydrated and took considerable quantities of the glucose saline drink. The jaundice gradually disappeared. He was discharged on Feb 15th, 1934, after a stay of nine weeks.

On Jan 9th, 1934, the lavalose tolerance test was carried out. The fasting blood sugar was 126 mg per 100 c cm. Fifty grammes of lavalose was given by mouth, and after one hour the blood sugar was 144 mg and after one hour it had fallen to the fasting level indicating a normally functioning liver.

The accompanying Table shows the amounts of glucose, insulin, and calcium used.

Table showing Treatment

Date in Dec	Glucose intra venous, 30 %	Insulin in units	Calcium gluconate, 10 %	Other treatment
	c cm		c cm	
12th	250	50	—	—
13th	250	50	—	—
14th	560	100	10	—
	560	100	—	—
15th	250	50	—	—
	540	50	10	—
16th	400	60	—	560 c cm 5% glucose in normal saline intra venously
17th	300	60	—	—
	300	60	—	—
18th	300	100	—	—
	300	100	—	—
19th	—	—	—	500 c cm 30 % glucose by mouth
20th	420	100	—	—
21st	360	100	—	500 c cm 10 % glucose by mouth
Total	4790	980	20	—

A single example can never be used to prove the value of any form of treatment and every clinician has seen apparently hopeless cases recover. A nihilistic attitude in such cases is not justified and while it is impossible to be sure that death would have occurred without the treatment used or to refute the view that recovery would have occurred without any treatment, I suggest that the treatment used had a beneficial effect.

SUMMARY

The causation of jaundice complicating pneumonia is discussed. The theoretical reasons for treating jaundice and cholemia with insulin, glucose, and calcium are stated, and a case is reported in which such treatment was successful.

I am indebted to Mr Ivor Lewis, medical superintendent of the North Middlesex County Hospital, for permission to publish the notes of this case.

REFERENCES

- Alexander J B (1927) *Practitioner* 119 234
 Arlin Deltell (1909) *Trib med Paris* 11, 168
 Brunl G (1929) *Clin med Ital* 60 205
 Cantarow A (1933) Calcium Metabolism and Calcium Therapy, Philadelphia p 183
 Chierici A (1932) *Trif med* 48 1914^r

(Continued at foot of next column)

PERNICIOUS ANÆMIA IN AN INFANT

By F S LANGMEAD, M.D., F.R.C.P. Lond.

PROFESSOR OF MEDICINE UNIVERSITY OF LONDON AND

I DONIACH, M.D. Lond.

ASSISTANT PATHOLOGIST DEPARTMENT OF PATHOLOGY,
ST MARY'S HOSPITAL

THE existence of pernicious anæmia in infancy is disputed by many authorities for it is difficult to find authentic cases and it does not fit in with the present concept of the etiology of this disease. The question arises whether there is any place for liver therapy in the primary anæmias of early life. Bachman (1936) has recently reported a case of macrocytic hyperchromic anæmia in an infant and reviewed 16 similar cases described since 1909. The recent cases were quickly cured by liver and remained well without any further treatment. Laboratory investigations showed that the majority had a normal icterus index and low gastric acidity. There was a history of infection in most of the infants. He put forward the view that the cause was dietetic combined with a low gastric acidity due to infection. His own case, an infant nine months old with a previous otitis, had a blood count with a colour index of 1.11, the hemoglobin being 83 per cent. The icterus index was normal, the stomach secreted only a little acid in response to histamine. Liver treatment brought about a reticulocyte response of 8 per cent, and when a normal blood picture had been restored the free acid in the stomach rose to within normal limits.

Parsons and Hawksley (1933) gave the following criteria for the diagnosis of pernicious anæmia in childhood: "In addition to megalocytosis there should be a high indirect van den Bergh, marked poikilocytosis, almost always an absence of free hydrochloric acid in the gastric juice, and a reticulocytosis with liver extract." The case described below fulfils these criteria.

CASE REPORT

The patient, aged 13 months, was admitted to the medical unit at St Mary's Hospital in October, 1936. He had been vomiting for three weeks, and he was under weight and backward in development. He was very ill and looked as though he was going to die. Weighing 6½ lb at birth he had been breast fed until 7 months old, from then till 13 months he was fed on diluted cow's milk with the addition of white bread, orange juice and two teaspoonfuls of Virol a day. His first teeth erupted at 7 months and he sat up at the same period. He has

(Continued from previous column)

- Coope, R., Osborn, H. A., and Pygott, F. (1936) *Lancet* 2 1079
 Davis N C and Whipple G H (1910) *Arch intern Med* 23, 612
 Elton N W (1931) *J Lab clin Med* 17, 216
 Harris B R (1927) *J clin Invest* 211 4
 Hurst, A F and Simpson C K (1934) *Guy's Hosp Rep* 84 173
 Lambert, G and Secretan W B (1932) *R Berl's Hosp Rep* p 82
 Lemierre, A., and Abrami, P. (1910) *Pr med* 18 82
 MacLachlan, W W G, Kastlin G J and Lynch R (1932) *Amer J med Sci* 184 511
 Manerli, S (1931) *Beitr path Anat* 86 375
 Mann F C and Magath T B (1922) *Arch intern Med* 30 171
 Minot, A S and Cutler J I (1929) *Proc Soc exp Biol, N Y* 26 607
 Newman C E (1928) *Lancet* 1 1012
 Pisani G (1930) *Riv clin Med* 31, 1148
 Preti L (1932) *Policlinico* 39 283
 Satke, O (1932) *Wien med Wschr* 83 1172
 Umber F (1932) *Klin Wschr* 1 1585
 Whitby L E H and Britton C J C (1935) Disorders of the Blood London p 277
 Wilder R M and Hansum, W D (1917) *Arch intern Med* 19 311

one brother and two sisters all in good health. His mother thought that he was a dull baby compared with her others. His parents and grandparents are alive and well.

On examination the infant had an extreme waxen pallor. His heart was considerably dilated a widespread systolic murmur being heard in the chest maximal at the lower end of the sternum. The veins in the neck were engorged, the liver edge was palpable halfway between the costal margin and the umbilicus, and the spleen could be easily felt. The anterior fontanelle was widely patent and showed much pulsation.

Laboratory investigations.—The icterus index was 17.8 units. The Wassermann reaction of the blood was negative. There was no occult blood in the faeces. An examination of the stool for fats showed total fats 35.0 per cent soaps 28.4 per cent fatty acids 3.5 per cent neutral fats 3.7 per cent. There was no free acid in the gastric juice. A blood count showed—

Red cells	2,550,000	Leucocytes	8,000
Hemoglobin	30%	Polymorphonuclears	20%
Colour index	0.98	Lymphocytes	68%
		Large mononuclears	1%
		Eosinophils	0%
		Basophils	0%

The red cells showed marked anisocytosis and poikilocytosis they were strongly eosinophilic with but slight polychromasia. One nucleated red cell was seen in the film. The polymorphonuclears had many lobes to their nuclei and platelets were almost absent from the film. The reticulocyte percentage was 1.3.

These results suggested that the child was suffering from an anemia due to lack of the hemopoietic principle.

Treatment and progress.—In view of his extreme illness we did not experiment and he was given liver extract rather than any preparation containing Castle's extrinsic factor. He was treated with intramuscular injections of Campton (2 c.c. every day). This resulted in a reticulocyte response of 18 per cent and a clinical improvement. A blood film taken at the time showed considerable polychromasia and 3400 nucleated red cells per c.m. Iron was added to his diet in the form of iron and ammonium citrate gr 3 three times a day. The blood count rose within a month to 5,000,000 red cells and 90 per cent hemoglobin, the colour index being 0.9. The

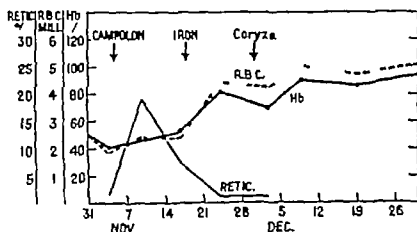


FIG. 1.—Chart showing reticulocyte response to campton and progress of the patient in hospital. RETIC.—reticulocytes. R.B.C.—red blood cells. Hb.—hemoglobin.

film showed numerous platelets, an increase of eosinophils and slight anisocytosis and poikilocytosis of the red cells. The improvement was maintained the child putting on over 3 lb in three months. He was given a mixed diet including marmite and orange juice. The course was however slightly marred by attacks of coryza. Fig. 1 represents the blood counts in chart form and shows his response to treatment. There was no free hydrochloric acid secreted in the gastric juice in response to an injection of histamine three months after the patient had been in hospital. The blood count at the time was normal and the patient was discharged.

DISCUSSION

A Price-Jones curve (Fig. 2) was drawn from a film taken before any treatment had been instituted.

The megalocytosis and microcytosis the values of σ and ν resemble the pernicious anemia curve seen in the adult. As a result of his age and gastric acidity it is reasonable to suppose that the child's iron storage was deficient. The hyperchromic anemia was probably superimposed upon a previous microcytic iron deficiency anemia of infancy. The mean diameter of 7.4 μ in the Price Jones curve may well have been a shift to the right of 1 μ from a previous

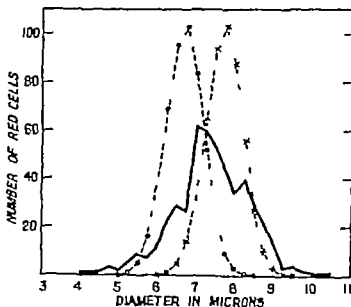


FIG. 2.—Price-Jones curve before treatment began.

6.4 μ . Castle and Minot (1936) state that the typical macrocytic blood picture of pernicious anemia may be modified by the presence of a complicating deficiency of iron to a normocytic or mildly hypochromic type. It will be interesting to see whether the patient remains well without liver therapy or whether he will need liver for the rest of his life.

The case appears to be one of pernicious anemia in an infant modified hematologically by a probable initial iron deficiency by virtue of the patient's age and deficient gastric acidity. One of the most striking features of the case was the excellent reticulocyte response to liver treatment.

SUMMARY

A case of pernicious anemia in an infant is described which fulfils the criteria of Parsons and Hawksley for this diagnosis in that his anemia was hyperchromic with a megalocytosis of 68 per cent, his icterus index was 17.6 units, his red cells showed considerable poikilocytosis, he secreted no free hydrochloric acid in response to histamine and he had a reticulocyte response of 18 per cent to campton when his red cell count was 2,000,000 per c.m. He was treated with liver and iron and discharged from hospital clinically well and with a normal blood picture.

We wish to thank Dr W. F. Henley, assistant to the medical unit who has carried out the chemical investigations.

REFERENCES

- Bachman A. L. (1936) *Amer. J. Dis. Child.* 52, 633.
Castle W. B. and Minot G. H. (1936) *Pathological Physiology and Clinical Description of the Anemias*. Oxford, p. 10.
Parsons L. G. and Hawksley J. G. (1935) *Arch. Dis. Child.* 10, 143.

ROYAL HOSPITAL, WOLVINGTON.—Expenses at this hospital during the last year have increased but contributions have kept pace with them. New extensions are proposed consisting of a semi-basement and three storeys planned so that in the future two or three more storeys can again be added if required. The semi-basement is to be made into a swimming bath and a gymnasium for the nursing staff and resident officers and the first two floors will each accommodate thirty beds.

RELAPSING STAPHYLOCOCCAL
SEPTICÆMIAASSOCIATED WITH CIRRHOSIS OF THE
LIVER AND SPLENOMEGALY

By F A PHILLIPPS, M D Camb

AN ÆTHETIST TO THE EVELINA HOSPITAL FOR CHILDREN
LATE SENIOR CLINICAL ASSISTANT TO THE HOSPITAL
FOR SICK CHILDREN

THE following case appears to me to be of considerable interest, and I therefore venture to report it. The patient, a well developed man aged 29, serving in the Navy, had severe jaundice, which varied considerably during the period of observation.

HISTORY

When at Dartmouth in 1922, at the age of 15, he was told that he had a thrill in his pulmonary artery and was not allowed cross country runs, though he played all games, including rugger, squash, &c 1927 had a febrile illness associated with hæmaturia, radiograms negative for stone. December, 1928 in Mediterranean, sent to Naval Hospital at Malta, diagnosed as rheumatic fever hand, elbow, shoulder, and right arm only affected, profuse sweating. March, 1930 kick on right shin at rugger, abscess followed, which was drained and healed quickly. 1932 at this time he was first noticed to be yellow.

Apparently from 1930 to 1933 he was playing rugger, squash, tennis, &c, and was in good health. August, 1933 in sick quarters at Shotley pain right shoulder, temperature 99° F treated with salicylates. September transferred to R N Hospital, Chatham, very yellow in face, and right shoulder very painful, negative reaction to test for tuberculosis, right shoulder immobilised, pyrexia. Prolonged sick leave on account of stiff shoulder. August, 1934 febrile attack. January, 1935 again injured right shin, again with abscess formation. March febrile. October in hospital at Aden, febrile for a few days yellow.

He was apparently afebrile from October, 1935, to March, 1936, having treatment for stiff right shoulder. March, 1936 right arm manipulated, he became much more jaundiced. April he started gastric symptoms—"indigestion," pains after meals, jaundiced.

There was no history of alcoholism or venereal disease.

EXAMINATION

The liver, which was not enlarged, was easily palpable below the costal margin. The spleen was enlarged and hard, and descended to the level of the umbilicus. There was a rough systolic murmur maximal over the left inter costal space, with well marked clubbing of the fingers. No Osler's nodes were observed. He had old arthritis of the right shoulder for which massage and mild movement had been given. The humerus could be moved some 30° before movement of the scapula was evident. No pain, heat, or swelling was present in the shoulder joint, but all muscles were wasted and deltoid movement was very limited. The abdomen was somewhat distended, which was in part due to the splenic enlargement. Old scars were present on the right shin.

INVESTIGATIONS

Van den Bergh reaction—June 20th positive and direct 5.0 units. Icteric index 30.

Urine (Dr W J Griffiths)—Urobilinogen not increased. bile a trace, bile salts absent. Centrifuged deposit shows neither red cells, pus cells, nor casts.

Blood examination (June 29th Dr J Bamforth)—

Red cells	3 840 000	Leucocytes	5900
Hæmoglobin	50%	Polymorphonuclears	60%
CI	1.04	Lymphocytes	33%
(confirmed by repetition)		Eosinophils	0.5%
No malarial parasites		No abnormal leucocytes	2%

July 1st platelets, 180,000 per cm, reticulocytes, 2.4 per cent.

Serum found to be jaundiced. Sachs George reaction negative. Agglutination against *Brucella melitensis* and *abortus* was negative in all dilutions. Fragility of red cells, hæmolysis started at 0.4 per cent (slightly more resistant than normal).

TREATMENT AND PROGRESS

At this period he was given Pernammon Forte 5.0 cm intramuscularly twice a week with ferri et ammon cit gr 20 tds, p.c. per os.

After his return home he continued to suffer from attacks of pyrexia at approximately fortnightly intervals, the temperature varying from 104° F on occasion to 100°, the usual duration being for two or three days. The first of these attacks occurred in May, 1936, from which time they recurred throughout the course of the illness.

Blood examination—On July 5th Dr W C Carnegie Dickson made an examination of the blood during a pyrexial attack, the count of which did not differ materially from the previous one of Dr Bamforth's, the colour index being 1.3, polymorphs 78.3 per cent. There was a moderate degree of anisocytosis with general increase in size to 9 or 10 μ , no appreciable poikilocytosis, no nucleated corpuscles or polychromasia. No malarial parasites, spirochetes, or kala azar parasites were seen. Severe leucopenia, eosinophils absent, blood platelets scanty. *Brucella* and *abortus* negative, fragility normal. Wassermann reaction negative. Gonorrhœa complement fixation, slightly more deviation than with normal.

Urine—(non catheter specimen) on ordinary agar, blood agar, &c, a growth of *Staphylococcus aureus*, in fluid media a very occasional streptococcal chain.

Blood cultures—Primary cultures and a series of sub cultures at 16 and 26 hours showed no growth, but at 50 hours showed a pure growth of *S. aureus*. These cultures were made during a febrile attack, two cultures made on the 6th (pyrexia subsided) showed no growth at 56 hours.

Van den Bergh reaction—Positive immediate direct, indirect also well marked (25 mg per litre of serum).

Sedimentation test normal.

Consultation—On July 17th the patient was seen by Sir Maurice Cassidy, Prof J W McNee, and Dr P Manson Bahr in consultation, when the question of tropical disease was fully discussed and eliminated. As a result of these deliberations cholecystography and a levulose-tolerance test were carried out. At the same time a radiogram of the great trochanter of the left femur was taken, as persistent pain was complained of with slight swelling.

Radiography—The cholecystography, by Dr W H Coldwell and Dr F M Allchin, was completely negative as dye did not enter, while the femur showed a small area of rarefaction with a sequestrum in its centre.

Levulose test (Dr Griffiths, July 27th). The blood sugar curve after 30 g of levulose was, within the accepted limits of normality, as follows—

Before test	0.117%	90 mins	0.117%
30 mins	0.135%	120	0.109%
60	0.139%		

A further blood count showed little difference from the previous ones, but the colour index was 0.9.

During the months of August and September the patient continued to receive injections of pernæmon once a week. He showed some slight improvement as evidenced by diminution in size of the spleen, less jaundice, and a lowered height of pyrexia in the attacks.

On Oct 17th, although he was not feeling well, he went out to dinner, and during the night developed a temperature of 103° F with gastric symptoms which persisted, and on Oct 21st he was transferred to St Thomas's Hospital for further investigation.

A blood count (Dr Bamforth) on this date showed red cells 25,400,000, hæmoglobin, 56 per cent, colour index, 1.09 per cent, leucocytes, 5600. Reticulocytes very scarce—not more than 1 per cent. Fragility of red cells started just below 0.4 per cent (more resistant than normal). No eosinophils in 200 leucocytes counted. A number of red cells showed polychromasia and a few cells showed basophil stippling, both constituted a small percentage of the cells.

Blood cultures taken on the same date gave numerous colonies of *S. aureus* in pure culture while cultures of the sputum on Oct 22nd gave an overwhelming growth of the same organism. On Oct 24th and 26th he received intravenous injection of 40 c.c.m. of staphylococcal anti-toxin daily after a preliminary testing with 0.1 c.c.m. and on Oct 25th 2 c.c.m. of parameon forte. The rest of the treatment was symptomatic.

The patient's pyrexia persisted, the jaundice markedly increased and he died on Oct 27th in coma.

POST MORTEM EXAMINATION (DR. J. O. OLIVER)

Diseases.—Staphylococcal septicæmia, osteomyelitis and cirrhosis of liver. Examined Oct 27th, 1936. Age 30.

Weights of body and viscera.—Liver 5 lb. 10 oz. Kidneys left 17½ oz. right 17 oz. heart 17 oz. spleen 2 lb. 12 oz.

Report.—There was a quantity of slightly blood-stained fluid in the abdominal cavity. Straw-coloured fluid distended the pericardial sac. Large numbers of firm adhesions were present all around the gall bladder and the main biliary duct.

The liver showed an extreme degree of multilobular cirrhosis with dilatation of all the larger bile channels of the liver. The gall bladder itself was distended with concentrated bile. There did not appear to be any obstruction of the bile-ducts other than that which might be accounted for by the adhesions referred to above.

The heart was grossly dilated on the right side and on the left side generally hypertrophied. A minute opening was present at the position of the foramen ovale and this opening was valvular in type suggesting a possible passage of blood from the left to the right side of the heart.

There was a small pyramic abscess in the wall of the aorta about 1 in. above the aortic valve and this had ruptured into the aorta itself.

The left lung was semi-collapsed with some exudate at the base and a number of small pyramic abscesses scattered throughout the lungs. The right lung was congested and oedematous.

The kidneys were extremely large and showed many small pyramic abscesses running along the course of the blood vessels.

The spleen was large and showed some septic reaction in an organ which appeared to have been previously enlarged.

The left femur a small superficial softened area was found in the bone in front of and below the great trochanter.

The brain showed congestion and oedema only. The sinuses showed no apparent infection in the ethmoid or frontal cells.

There was no macroscopic thrombosis of the splenic or portal veins.

A photomicrograph of a part of the liver is shown in the Figure and Prof. McNece has kindly given me his opinion of the section. This slide shows very typical advanced cirrhosis in a fairly active stage with much round celled infiltration.



Typical advanced cirrhosis in a fairly active stage

COMMENT

Some points of particular interest in this case appear to be as follows: 1 The prolonged duration probably a period of 8 years with intermittent exacerbations of a staphylococcal infection. 2 The association of the above with multilobular cirrhosis of the liver and considerable splenic enlargement. 3 The uniformly high colour index. 4 The normal kaovulose test in spite of the advanced cirrhosis. 5 The presence of a pyramic abscess in the wall of the aorta.

My thanks are due to the many doctors who have carried out the numerous investigations for the use of their notes, and especially to Sir Maurice Cawley for his kind criticisms and help with this report to Prof. J. W. McNece for his opinion on the slide and to Dr. J. O. Oliver for his account of the findings at autopsy.

CLINICAL AND LABORATORY NOTES

ACUTE SACRO ILIAC STRAIN

A PERSONAL EXPERIENCE

By R. Y. PATON, M.B. Camb. F.R.C.S. Eng.

ORTHOPEDIC SURGEON, ROYAL ORTHOPEDIC HOSPITAL, CONVENT ROAD, LONDON, E.C.1.

As I was digging in my garden the other morning and endeavouring to turn over a particularly resistant portion of clay soil I experienced a sudden acute pain in the lower part of my back on the right side and on trying to straighten myself up was unable to do so.

It was with difficulty that I was able to walk a few yards to the house and with even more difficulty to ascend the few steps necessary. Walking was extremely painful and I could do so only with the right hip and right knee slightly flexed. On sitting down I found it very hard to get into a comfortable position and impossible to cross the right knee over the left without great pain. There was great tenderness over the upper portion of the right sacro-iliac joint and there was pain down the back of the right thigh and on the outer aspect of the right calf. Ten grains

of aspirin made not the slightest impression on the pain. When the telephone rang it was with great difficulty that I lowered myself out of a chair and walked the few feet to it.

After about an hour the pain was still as bad, so I thought I must attempt some form of self-manipulation as I had relieved so many people in similar conditions by manipulation. I stood up as straight as I could with my legs abducted and my feet externally rotated. With my arms widely abducted I rotated my trunk towards the left and then suddenly, and as vigorously as I could, rotated my trunk round to the right as far as it could go. There was a sudden audible snap and the pain down the leg had completely gone. I was able to move perfectly freely again; I returned to the garden and completed my digging and then I proceeded to pull a heavy roller all over the lawn without any discomfort or disability. The next day, apart from a slight ache in the right sacro-iliac region, there were no other symptoms whatsoever and all movement being perfectly free and painless.

Cases of acute sacro-iliac strain are common and their relief by manipulation is well known. The customary manipulation is to rotate the pelvis forwards with the shoulders fixed at the same time using some downward pressure on the pelvis. This man-

pulation can be done easily without an anæsthetic if the attack is of very recent onset, but later requires a general anæsthetic. The movements which I carried through in my own case were intended to reproduce this rotary movement as far as possible, and results show that they were successful.

I hope this small note will prove of use to any medical colleague who finds himself similarly smitten.

PULMONARY ŒDEMA FOLLOWING THE ADMINISTRATION OF ESERINE

By W. E. COOKE, M.D. Liverp., F.R.C.P. Lond. and Edin., D.P.H.

DIRECTOR OF THE PATHOLOGICAL DEPARTMENT, WIGAN INFIRMARY

THE increasing frequency in the use of eserine in renal sympatheticonus as well as the unusual fatality prompt this note.

A female, aged 19, was operated upon for subacute appendicitis in August, 1936. In January, 1937, she returned to Mr. J. B. Oldham with right renal colic. During the renal investigations it was noticed there was definite delay in the emptying of the right renal pelvis.

and the condition was diagnosed as renal sympatheticonus. Immediate renal sympathectomy was considered unjustifiable, the patient sent home and her family doctor advised to inject 1/50 of a grain of eserine if attacks of colic recurred. She resumed her occupation, apparently well, until March 6th, 1937, when returning from work she had an attack of pain in the right flank. She walked into her doctor's waiting room and lay on a couch. One-fiftieth of a grain of eserine was administered hypodermically. In a few seconds the patient was seized with intense respiratory distress, becoming increasingly urgent, and blood stained frothy mucus poured from her mouth. She was given 1/100 of a grain of atropine but she died in about fifteen minutes after the eserine injection.

Autopsy.—The pupils were midway between contraction and dilatation. There was a band of adhesions anchoring the cæcum to the anterior abdominal wall. The pelves of both kidneys were injected and the bladder contained a little purulent urine. The larynx, trachea, and bronchi contained blood stained frothy mucus. The lungs were voluminous and heavy, pitted on pressure, and on section poured out blood stained serum. All the other organs were normal.

The above are the facts of the case, and comment seems unnecessary unless it is to point out the possible untoward effects of eserine and that, although atropine was administered, the course of the pulmonary Œdema remained unchecked.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF UROLOGY

THIS section held its annual general meeting in London on April 22nd and 23rd under the presidency of Mr. BERNARD WARD (Liverpool).

Closed Prostatectomy

Mr. CLIFFORD MORSON opened a discussion on the Harris operation and its modifications. The most important modification that he himself had introduced was the substitution of a longitudinal for a transverse incision, and the elimination of the postero-lateral sutures in the reconstruction of the bladder base. He objected to such sutures because of their nearness to the ureteric orifices. For Harris's lateral sutures he substituted a figure of eight suture which he believed to be more effective in closing the cavity. Only if the urine was not sterile or if he was dissatisfied with the hæmostasis did he omit primary closure of the bladder. Mr. Morson then gave his reasons for preferring the Harris to all other techniques in prostatectomy. He did not wish to justify it simply because of the mortality rate—for mortality rates were deceptive unless at least 500 operations had been done—but because it eliminated many of the dangers and complications following prostatectomy, shortened the period of convalescence, and added to the patient's comfort. Both reactionary and secondary hæmorrhage were uncommon after it, and the stay in hospital was reduced by at least a fortnight. Moreover the Harris technique diminished what he termed the remote mortality of prostatectomy—i.e., deaths occurring some six months after the operation as a result of the strain to which patients had been subjected.

Mr. W. W. GALBRAITH (Glasgow) stated that in 27 out of 29 cases he had closed the bladder. In his opinion some of the opposition to the Harris technique was due to the fact that the principles laid down by Harris were not followed, especially was this true of preliminary treatment. But the

fact that he, Mr. Galbraith, favoured the technique did not mean that he felt that it should be carried out in every case. Selection was necessary, and in this selection the state of the cardiovascular system was of very great importance.

Mr. TERENCE MILLIN said that the chief modification he had made in the original Harris technique was to substitute Lumbe's method of bringing down the posterior trigonal flap for that of Harris. As a precautionary measure he also placed two temporary "funk" silk sutures on the bladder and brought them out of the abdominal wound. If it became necessary to open the bladder because of hæmorrhage, the sutures made this easier.

Mr. C. A. WELLS (Liverpool) advocated the transverse incision employed by Harris, because he felt that it encouraged better healing. As a safety valve he used a small suprapubic tube closed by a spigot. Through this the bladder could be washed out if need be.

Mr. A. H. JACOBS (Glasgow) was surprised that no speaker had mentioned that severe complications might follow the Harris technique. He himself had had two cases of serious pelvic cellulitis. In one of these the patient had died and post mortem an abscess was found posterior to and communicating with the prostatic cavity. This did not mean that he would not employ the Harris technique, but he felt it necessary to point out that its complications might be more serious than previous speakers had suggested.

Mr. MORTON WHITBY called attention to the importance of pre-operative treatment. He had devised a two-way catheter by means of which continuous irrigation might be carried out.

Mr. E. W. RICHES preferred a transverse to a longitudinal incision on the ground that his patients' comfort was thereby increased and convalescence shortened. Cases must be selected for the Harris operation, and he thought that when death occurred it was usually due to some systemic cause such as embolism or cardiac failure. As an anæsthetic he

liked a combination of a low spinal analgesia followed by gas and oxygen with an abdominal field block.

Perurethral Operations

Mr KENNETH WALKER read a paper on the treatment of prostatic obstruction by perurethral methods. He recalled that he had introduced a similar discussion as long ago as 1926. His mode of presentation would however be very different on this occasion. In 1926 it was necessary to plead for a method that was in its infancy—and in a none too healthy infancy. Now the child had grown so lusty and rampagous that in some parts of the world it was necessary to plead not for perurethral methods of treatment but for the parent operation of prostatectomy. He would therefore assume the attitude of a critic rather than of an apologist, dealing especially with the complications and disadvantages of perurethral resection. In his experience the main disadvantage was sepsis. Some of this sepsis was inevitable and due to the fact that the operator left behind coagulated tissue which formed an excellent nidus for organisms. Because of this there was a present tendency to turn again in the direction of Young's cold punch using coagulation merely for sealing-off bleeding points. But some of the sepsis was due to the trauma of instrumentation. An electrotome was not an easy instrument to pass and in cases of involution of the genital tract where the urethra was small it was easy to damage the tissues. Another fruitful source of infection was probably opening up the space of Denonvilliers by perforating the trigonum. Mr Walker concluded by discussing what cases were suitable for resection. Perurethral methods were particularly indicated in minor enlargement of the prostate and for patients in whom there were complications that made prostatectomy too dangerous.

Mr R. H. O. B. ROBINSON described the technique employed at the Mayo Clinic. Two instruments were in use there the Bumpus and the Thompson punch. Both instruments were difficult to handle because they were of the direct vision type. They had the advantage however of causing less damage to tissues. He employed these methods at St. Thomas's and with satisfactory results.

Mr F. Mc G. LOUGHRANE called attention to the danger of resecting prostatic tissue on either side of 4 or 8 o'clock. Where he had disobeyed this rule he had had infection of the cave of Retzius.—Mr H. P. WINDSBURY WHITE did not believe in massive resections but in removing only five or six fragments.—Mr MILLIN preferred Young's punch for fibrous prostates because of the danger of pelvic cellulitis. In carcinoma and cases of post prostatectomy obstruction the McCarthy resectotome gave excellent results.—Mr JOHN EVERIDGE recalled a case where in attempting to get the loop above a large lateral lobe in a bladder that could not be distended the wall had been perforated. He said that in order to avoid haemorrhage a cut could not be made too slowly.—Mr RICHES pointed out the advantage of infiltrating the prostate before resection with 0.5 c.c.m. of adrenaline in 10 c.c.m. of Peracine solution. This materially reduced haemorrhage. If clot retention occurred after operation the glycerin of pepsin treatment gave excellent results.

Spinal Injuries and the Bladder

Sir JOHN THOMSON WALKER on April 23rd read a paper on injuries to the spinal cord affecting the bladder. Before the late war he said it was taught that injuries to the lumbar swelling and cauda equina were followed by distension of the

bladder and overflow. Experience during the war however showed that after such injuries periodic reflex micturition was soon established the bladder learning to contract at intervals and to empty itself more or less satisfactorily. The chief problem during the war had been the avoidance and treatment of sepsis 80 per cent. of spinal cases dying of surgical kidney. He would therefore like to discuss how this appalling death rate could be avoided. Four methods of treatment for the retention following spinal injuries were possible.

- (1) Non interference—i.e. allowing the distended bladder to empty itself by overflow.
- (2) Emptying the bladder by abdominal pressure.
- (3) The use of an in-dwelling catheter.
- (4) An immediate prophylactic cystotomy.

The chief disadvantage of non interference was that the rule that a distended bladder should be emptied by the passage of a catheter was so ingrained in the medical profession that during the war it of the wounded from the front to England some doctor was bound to pass a catheter. Emptying of the bladder by pressure on the abdomen could only be carried out by someone skilled in this method of treatment. Spasm of the sphincters made it sometimes very difficult and rupture of the bladder had been reported. The chief complication that had arisen in the war from the use of an in-dwelling catheter was sloughing of the floor of the urethra at the penoscrotal junction. Personally he had advocated immediate prophylactic cystotomy as the best method of overcoming the peril of sepsis. While this did not prevent cystitis it removed the conditions favourable to the upward spread of sepsis—namely infection associated with retention. What was required most in order to solve the problem was continuity not only of observation but also of treatment.

Sir ALFRED WEBB JOHNSON thought that an authoritative statement that a catheter must never be passed in the presence of a spinal injury would save many lives. He suggested that the right combination of treatment might turn out to be non interference at the front and early cystotomy at the base hospital or when the patient reached England.

Mr KENNETH WATKINS (Manchester) confirmed the fact that cases of spinal injuries in civil life did not die of urinary sepsis. This was probably because whereas most civil injuries were injuries to the cauda equina most war injuries were at a higher level.

Mr EVERIDGE described a case of spinal injury in the dorsolumbar region that had been successfully treated by early cystotomy.

Undescended Testis

Prof. GRAY TURNER in a paper on the treatment of the undescended testicle said that up till 1927 he had made very little effort to save a misplaced testicle and had usually performed orchidectomy. Since then however he had adopted a more conservative attitude. He was sceptical about a testicle ever descending spontaneously after the third year of life. Some authorities considered that the best period of life at which to begin hormone treatment was at about nine; he himself was of the opinion that eleven or just before puberty was the time of election for operative treatment. This would allow of patients having a preliminary trial of gonadotropic hormone. In discussing operative technique he laid emphasis on the importance of mobilisation of the cord as high up as possible. The chief obstacle

to a testicle being brought down was not shortness of the vessels but adhesions between the vas and the peritoneum

Mr W McADAM ECCLES urged that the term "undescended testicle" should be abandoned in favour of "imperfectly migrated" testicle. Much had still to be learnt about this subject, and he felt that the greatest help would be obtained from the experience of medical officers to schools.

Mr T W MIMPRISS gave the post operative records of 80 cases treated by the Bevan technique at St Thomas's Hospital. Only half of these operative results could be said to be satisfactory. Better results were noted with the transeptal technique and although there were as yet an insufficient number of cases available, it looked as if the Keetley Thorek technique was going to give the best results of all. He was sceptical of the action of gonadotropic hormone.

Dr RONALD SMITH (Rugby School) said that imperfectly descended testicle was extremely common amongst schoolboys. Contrary, however, to Prof Grey Turner's belief, a very large number of these testicles descended spontaneously before puberty. He therefore recommended that all cases be left till puberty before an operation was undertaken.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY

A MEETING of this society was held in Sheffield on April 2nd with Dr J W BRIDE (Manchester), the president, in the chair.

Labour Obstructed by Fœtal Bladder

Dr F J BURKE (Liverpool) gave an account of a case of dystocia due to over distension of the fœtal bladder.

The patient, a multipara aged 29, went into labour at 9 p.m. on Jan. 27th, being about 35 weeks' pregnant. At midnight the head and hands of the fœtus were born but there was no further progress. When admitted to hospital she was having strong pains and was acutely distressed. The fundus reached to midway between the umbilicus and the ensiform cartilage, and no fœtal heart could be heard. A fœtal head and two hands were protruding through the vulva. The fœtal neck was long and the cervical spine was fractured—no doubt through vigorous traction by a practitioner who had been called in by the midwife. The thorax was found tightly plugged in the maternal pelvis, and an incision was made through the fœtal chest wall. A large quantity of fluid escaped and delivery was soon completed. The fœtus weighed 6 lb and was considerably elongated, with the abdominal wall in large folds; there was also bilateral talpes equinovarus. Post mortem the bladder in its collapsed condition measured 6 in. by 4 in. and had hypertrophied walls. Both ureters were dilated and the kidneys enlarged. The urethra was patent, a small catheter passing without difficulty.

Dr Burke said that several similar cases of distension of the fœtal bladder with patency of the urethra had been described, and he quoted those of Savage and Crawford and Jeffcoate. Neuromuscular dysfunction was the usual explanation of the failure of the fœtal bladder to empty itself. He also wondered what part was played by the fœtal kidneys in the production of liquor amni. Gaylord Bates had pointed out the frequent association of oligo-hydramnios and fœtal renal anomalies. The biochemical studies of Makepeace Smith and Carroll strongly suggested that the liquor amni was a

transudate which, in early pregnancy, was in isometric equilibrium with maternal and fœtal blood, but in late pregnancy was hypotonic because of the addition of fœtal urine. On the other hand, there was evidence that the fœtal kidneys did not subscribe to the liquor amni. Phloridzin injected into the mother could be readily detected in the fœtal tissues, but it was rare to find even a trace of sugar in the liquor amni.

The PRESIDENT said that the condition seemed always to be associated with obstruction to the urethra, and that he supposed it was more common in the male fœtus—Mr J E STACEY referred to the elongation of the cervical vertebra and the talpes equinovarus, and wondered whether the condition was associated with any spinal lesion—Dr BURKE, in reply, said he had no doubt that the elongation of the cervical vertebra was produced by trauma.

Adenomyoma Causing Intestinal Obstruction

Mr A GOUGH (Leeds) described a case in which an adenomyoma was responsible for acute intestinal obstruction.

The patient, aged 42, had never been pregnant. She had had gradually increasing constipation for six months, culminating in complete obstruction. The day before Mr Gough saw her, she had had absolute constipation as regards both faeces and flatus, and had vomited once. Her general condition was quite good, and there was a tense rounded swelling in the hypogastrium the size of a four months' pregnancy. On vaginal and rectal examination a hard fixed mass was felt behind the uterus and involving the upper part of the rectum. On opening the abdomen the rounded swelling was found to be a chocolate cyst of the left ovary. There was much indurated tissue involving the cervix and the upper part of the rectum. A diagnosis of adenomyoma was made, and later confirmed by histological examination. A colostomy was performed, after the bulk of the disease had been removed, including both ovaries and the uterus. A fortnight later, Mr Gough was able to start making a way through the obstructed bowel, by passing gum elastic bougies up the rectum. These were followed later by rectal tubes passed from the colostomy downwards. In a fortnight the passage had been dilated to $\frac{7}{8}$ in. The colostomy was closed in stages by the use of an enterotome. Six days later the bowel was dissected from the abdominal wall and the wound closed. Some leakage occurred but within three weeks the fœcal fistula had closed.

Mr GOUGH said that an acute obstruction due to an adenomyoma must be very rare indeed—The PRESIDENT said it was quite clear that the adenomyoma was in the bowel wall, and not merely in the rectovaginal space—Prof LEYLAND ROBINSON (Liverpool) remarked that the case showed how important it was that a gynaecologist should have a knowledge of general surgery.

Dr GLADIS KAY gave a demonstration of X ray films taken of pregnant women during the ante-natal period. The PRESIDENT, Prof A M CLAYE (Leeds), Mr J E STACEY (Sheffield), and Mr T F TODD (Manchester) took part in the discussion.

SALFORD ROYAL HOSPITAL.—Extensions and alterations to this hospital though not quite finished were opened on April 12th. The ceremony took place in the new Bernhard Baron orthopaedic department, for which the trustees of the late Mr Baron have given the sum of £3000. The erection of a new casualty department and the enlargement of the outpatients accommodation have been made possible by a donation of £8000 from the Lancashire and Cheshire Miners' Welfare Fund. The hospital's deficiency on capital account now stands at £24,498.

REVIEWS AND NOTICES OF BOOKS

Diseases of the Nose Throat and Ear

A Handbook for Students and Practitioners By I SIMSON HALL MB ChB FRCP E FRCS Surgeon to the Royal Infirmary Edinburgh (Department for Diseases of Nose Throat and Ear) Edinburgh E and S Livingstone 1937 Pp 422 10s 6d

Mr Simson Hall has tried to explain the essential features of disease of the throat, nose and ear within the compass of a very small book intended for the student and the busy practitioner. It is due to the clearness of his thought and style that he has achieved a considerable measure of success, though the result would have been still better had he allowed himself a little more space. A very short account of the anatomy of the region is given before each section and the usual methods of examination are described. But in many cases the picture presented of the commoner clinical types of a disease is not adequate to enable the practitioner to recognise it and make a diagnosis. This is especially notable in the section on diseases of the larynx where the description of tuberculous laryngitis can give the reader no idea of its usual aspects. The flask-shaped arytenoids, turban epiglottitis and the early unilateral infiltration of the cord are not mentioned, no help is given in the paragraph on the diagnosis of this disease and of the diagnosis of syphilitic laryngitis it is merely said that this is usually made by means of the Wassermann reaction. We must protest too against the statement that the routine method of combating dysphagia in tuberculous laryngitis is the free use of cocaine.

The best part of the book is that which deals with diseases of the ear where the description of acute otitis and its complications is particularly lucid. When discussing the use of drugs accurate doses and concentrations might usefully have been given. Boric and iodine powder is recommended for aural suppuration but the proportions of the mixture are not stated in the text or in the appendix. Carbolic acid at a strength of 4 per cent. is advised in the acute stage of otitis media but whether in aqueous solution with a syringe or as drops is not mentioned. In the short appendix on formulae ear drops of carbolic acid in glycerine are given at a strength of 6 grains to 2 ounces, or about one half per cent., an unusually weak solution and under Biegvad's drops the proportion of cocaine is not stated. We point out these errors of detail because they are important in a book intended for use in a doctor's practice and because we hope that they will be corrected in a subsequent edition. On the whole the teaching is clear and definite and the advice given is so sound that the work should have an established place among the smaller text books on its subject.

Biological Laboratory Technique

By J BRONTE GATENBY B.A. B.Sc. D.Phil. Oxon M.A. Ph.D. Dublin D.Sc. Lond. Professor of Zoology and Comparative Anatomy Trinity College Dublin University London J and A Churchill 1937 Pp 130 7s 6d

Owing presumably to the variability of the materials used there is no such thing as a standard result obtained when making a microscopical preparation of a given tissue with a given procedure and reagent. The worker must get to know his materials

by experience and he obtains his results by a process which he can demonstrate but can rarely explain. If microscopy is like cooking an art most books on microscopical technique have the same limitations of function as do books on cookery. Prof Gatenby's work however should be valuable to teachers and to those who are beginning research mainly because he gives hints on just those minor but important points of detail which are generally omitted from text books. An original and particularly useful chapter is the one dealing with methods of observing the structure and behaviour of the living cell, for the sight of a living cell is a lamentably rare experience for the average student of histology. The section which provides an introduction to the technique of microchemical testing will also be welcomed.

The title of the book is somewhat misleading since it deals solely with microscopy.

Recent Advances in Orthopaedic Surgery

By B H BURNS B.A. B.Ch. FRCS Orthopaedic Surgeon to St George's Hospital and J H ELLIS M.A. B.Ch. FRCS Orthopaedic Surgeon to St Mary's Hospital London J and A Churchill 1937 Pp 206 15s

The authors of this excellent little book emphatically state that it is not intended to be a text book but only a discussion of views held to day on certain orthopaedic subjects. Nevertheless they survey a very wide field and contrive to compress into a small space an enormous amount of valuable information. They achieve this by a rigid economy in words without sacrificing clearness by careful choice from a laborious study of the literature and by the avoidance of unnecessary detail. They have interpreted advances in its widest sense—implying not only additions to knowledge but also the standardisation of ideas and methods previously in use. The acceptance for instance of Alhson and Gormley's classification of arthritis does not bring new knowledge but does certainly introduce order out of chaos. Some knowledge on the part of the reader is assumed but the appeal is not only to orthopaedic surgeons.

Subjects of interest to general surgeons and to students such as chemistry of bone, bone tumours, acute and chronic osteomyelitis, tuberculous joints and coxa vara to mention only a few are included and at the end of each chapter a carefully chosen bibliography of the more important works are appended. When an article, book or discussion at a medical meeting has seemed to be particularly significant it is summarised and made the subject of a complete chapter. It will be generally agreed that the article on that obscure subject—the painful shoulder—is particularly valuable. Few students will have the time or inclination to read Codman's admirable work and the authors have rendered a service in summarising it so excellently.

The writing of a book on recent advances is an opportunity of reviving good ideas that run the risk of being forgotten and it is surprising that no reference is made to Kindsa's work in connexion with the importance of correcting the anteversion of the neck of the femur in the treatment of congenital dislocation of the hip. The omission is the more surprising since in the X-ray which is reproduced to show a result of a shelf operation the head of the femur is anteverted by about 70 degrees. Apart

from this everything seems to have been included which can be interpreted as an advance during the last five years, and placed in its proper perspective. The book is small and easy to handle, and contains ample and well chosen X rays and diagrams. It fills a long felt gap, and should find its place on the bookshelves of surgeons interested in bone and joint disease. It is a book that will be easy to keep up to date, so that it should become a standard work for those studying for higher qualifications.

Fundamentals of Human Physiology

Fourth edition. By the late J J R MACLEOD, M.B., D.Sc., F.R.S., late Regius Professor of Physiology in the University of Aberdeen, and R J SEYMOUR, M.S., M.D., Professor of Physiology, Ohio State University, Columbus, Ohio. London: Henry Kimpton, 1936. Pp 424. 10s 6d.

To revise even a small book which is twelve years old is a heavy task. Prof Seymour has done it well, this work remains a reliable exposition of the fundamentals of human physiology, and as befits an introductory text book, includes adequate information on anatomical and chemical points. It leaves no part of the subject untouched, having chapters not only on the special senses, but on subjects such as immunity, nutrition, and hygiene. Physiology is therefore presented in perspective, an important feature for the student who wishes to understand its scope and main principles without reading too widely. The editor states that the section on metabolism has been cut down by half and that on the endocrines expanded, but nutrition, digestion, and metabolism still cover a hundred pages, while the ductless glands are given only fifteen. The balance of the book thus needs attention in this direction if it is to represent modern physiology in miniature. It may be conceded, however, that the present arrangement accords sufficiently with the title, and in a work of this size sins of omissions must not be treated too seriously.

British Journal of Surgery

THE April issue contains the following papers —

CARCINOMA OF THE MALE URETHRA with report of a case. By Henry Mortensen (Melbourne). The rarity of the condition is noted and its association with persistent stricture requiring repeated dilatation. Suspicion should be roused when dilatation is unsatisfactory and there is a persistent discharge of blood from the urethra. Squamous metaplasia of the epithelium occurred in the case reported.

FAT EMBOLISM report of a case, with review of the literature. By A J Watson (London). A fatal case is recounted. The origin of the fat emboli—either from the medullary fat or by aggregation of the fat emulsion of the plasma—is discussed. The symptoms may be pulmonary, with fat in the sputum, or systemic, with delirium, and fat in the urine.

PYELOGRAPHY IN RENAL HYDATIDS. By R Campbell Begg (Wellington, N.Z.). The characteristic deformity of the pyelogram can decide the side, nature and site of the lesion. In the absence of hydatids in the urine it differentiates hydatid disease of the liver, spleen, or perirenal region from that of the kidney.

MULTIPLE VILLOUS PAPILLOMATA OF THE GALL-BLADDER. By F R Brown and D F Cappell (Dundee and St Andrews). Cholecystectomy was performed for acute cholecystitis, and multiple calculi were found.

A CASE OF RUPTURED ANEURYSM OF THE SPLENIC ARTERY WITH RECURRENCE. By Clifford G Parsons (Birmingham). Rupture occurs first into the lesser sac, and only secondarily into the general peritoneal sac. Operation stands more chance of success in the first

stage. In the case described ligation of the artery and splenectomy were followed by recovery. The recurrence was fatal, owing to technical difficulties of the operation.

ONE STAGE LOBECTOMY FOR HYDATID DISEASE OF THE LUNG. By A L d'Abreu (Cardiff). The cyst was subpleural and probably on the point of rupture into the pleural cavity. There had been symptoms for 42 years. The patient, aged 60, made a splendid recovery with primary healing of the wound.

EFFECT OF BRACHIAL PLEXUS BLOCK ON PATIENTS SUFFERING FROM SECONDARY TRAUMATIC SHOCK. By H J B Atkins (London). It was hoped to protect patients with severe injuries of the upper limb from the nervous impulses causing secondary shock. The result of the block was a large fall of blood pressure. This is attributed to the general action of the local anæsthetic, independent of the site of injection.

FIXATION OF THE HIP JOINT BY MEANS OF AN EXTRA ARTICULAR BONE GRAFT late results. By Hugh C Trumble (Melbourne). A strong tibial graft is implanted between the ischial tuberosity and the upper end of the femoral shaft. The results in 8 cases of tuberculosis of the hip are encouraging. The tuberculous process has healed or is quiescent, and many of the patients have returned to their original occupations.

TREATMENT OF FRACTURED PATELLA BY EXCISION a study of morphology and function. By R Brooke (Chichester). The author thinks the patella has no useful function. Experiment on the cadaver shows that extension is more effective in its absence, and in 30 cases of fractured patella removal has been followed by rapid recovery of full function.

A NOTE ON THE EXTENSION APPARATUS OF THE KNEE JOINT. By W Hey Groves (Bristol). The insertion of the quadriceps tendon is shown to occur almost independently of the patella. The importance, in operations of repair, of preserving and suturing the lateral expansions of the quadriceps is noted.

SOME REFLECTIONS ON GASTROSTOMY. By E S J King (Melbourne). Experience of 60 cases has led King to set down principles that should guide the surgeon in the choice of operation and in subsequent feeding. Attention is drawn to the advantages of solid food.

EXPERIMENTAL LESIONS OF THE RABBIT'S APPENDIX. By A Q Wells (London). Gangrenous appendicitis followed ligation of the appendicular vessels and the meso-appendix. Obstruction of the lumen of the appendix, associated with a lesion of the mucosa, caused appendicitis and death. Obstruction of the lumen alone caused mucocele. Ligation of the root of the appendix and of the vessels caused atrophy of the appendix, without inflammation.

INTESTINAL STRANGULATION. THE HISTAMINE CONTENT OF THE PERITONEAL EXUDATE FROM STRANGULATED INTESTINAL LOOPS. By Ian Aird and W K Henderson (Edinburgh). An 8 inch loop of lower ileum was isolated in a rubber bag. The histamine content was tested by the effect of extracts on blood pressure of atropinized cat, on rat uterus, and on virgin uterus and ileum of guinea pigs. The total content amounted to as much as 4 mg. Although this amount is large, histamine is not to be regarded as the sole lethal factor in the exudate. Its bacterial origin is not wholly accepted.

EXPERIMENTAL OBSERVATIONS ON THE SPREAD OF CARCINOMA BY THE BLOOD STREAM, with special reference to the difference between the portal and systemic routes. By David H Patey (London). A dilute emulsion in saline was used of the Brown Pearce tumour of the scrotum of rabbits. Injection into the portal system of rabbits in 41 cases was followed by visceral tumours in 7. Similar injection into a systemic vein gave visceral tumours in 30 out of 44 cases.

BASIS OF TREATMENT OF VASOSPASTIC STATES OF THE EXTREMITIES an experimental analysis in monkeys. By P B Ashcroft (London). The immediate and late effects of pre and post ganglionic division of the sympathetic nerve supply to the limbs was studied by skin temperature records. Post ganglionic division was found to produce a great increase in adrenaline sensitivity and an increased sensitivity to cold. It is suggested that this may account for 'recurrences' after operations of sympathectomy on the upper limb, and that pre ganglionic section is a better operation.

THE LANCET

LONDON SATURDAY MAY 1 1937

INJURIES OF THE FACE

FEW of us reach maturity without having on some occasion suffered acute embarrassment from the consciousness of a facial lesion—be it only a scratch or mole or pimple. An assurance that others have not noticed it is offensive rather than comforting for the oriental expression which identifies face with self-esteem implies but little exaggeration of the normal attitude. More serious and permanent lesions whether congenital such as cleft lip or naevi or acquired such as tissue loss or distortion after a wound or accident, can indeed inflict such mental trauma that the development of plastic surgery to its present high level is of far more than æsthetic value. BLAIR BROWN and BYARS¹ in a recent study of injuries of the face note that a conviction of deformity may even persist despite the most perfect repair and that unless it is wisely handled may destroy the value to the patient of any operative measure. It is of the utmost importance then to avoid procedures immediately after any injury which will increase the final scarring. Often the plastic surgeon is more embarrassed by the scars of primary sutures or by the results of immediate débridement than he is by the direct effects of the injury. On the other hand in fractures of the face delay may be even more dangerous from the cosmetic point of view than immediate repair by one who is not an expert since according to these authors once solidification occurs satisfactory reposition of bones of the face is nearly always impossible. In their article on prognosis in plastic surgery GILLIES and MOWLEM² take a different view holding that where there is no skin lesion demanding immediate treatment accurate reposition of the bony fragments may be facilitated by waiting for a week or so to allow swelling to subside. The position of the fragments can then be more readily ascertained by palpation and their replacement more exactly controlled. It must be remembered however that the procedure must depend on the degree of specialised experience of the surgeon and that the American authors are addressing the general rather than the expert plastic surgeon.

In treatment of injuries of the soft parts the first rule is not to sacrifice tissue. A great deal of faith can be placed in the vitality of flaps of facial tissue. In certain types of injury to the soft parts primary suture is also important. Blair Brown and Byars cite four in particular. In the trap-door flap with a narrowly bevelled edge delay in suturing the thin edge into position may

lead to its crumpling up in the scar with an obvious cushioning of the tissue beyond it. Careful reposition of torn pieces of ear again may be the only chance of preventing distortion. Narrow double-surfaced flaps as at the border of the lip ear or eyelid if left hanging are apt to become so twisted as to be unusable in a subsequent repair. Finally it is recommended that all cuts and tears of the skin of the nose and its cartilage be immediately closed with sutures as this may be extremely difficult to do later on. In this connexion we may note that in a recent publication another American surgeon J. EASTMAN SHEEHAN³ deals with the repair of cartilaginous defects of the nose in very great and useful detail, though his views on the utilisation of cartilage in preference to bone for the restoration of major losses of the bridge line do not correspond with modern British practice. In the nose immediate reduction of bony and cartilaginous displacements of the parts is advisable for a late replacement may be a formidable procedure. There is a difference of opinion among experts as to the value of intranasal packing in retaining the reduced fragments. Blair Brown and Byars use a metal splint in cases which do not remain reduced without difficulty. They draw attention to the importance of nasal injury in small children. The possibility of distorted growth of the septal cartilage resulting in later life should be remembered even after injuries that at the time seem trivial. Their practice is to explain the position to the parents and obtain consent to make forcible pressure on the bony ridge from within so as to straighten any bend in the septum.

The value of co-operation with the dental surgeon in all fractures of the jaws is well recognised in this country. Often the repair is primarily an orthodontic problem. The two methods now employed are interdental wiring and the dental splint. Almost any fracture with sufficient displacement to require splintage must be compound. Ordinary wire buried in the jaw will in most cases result in osteomyelitis and bone loss. Possibly the passage of wire through the alveolus of the fragment with fixation to an adjacent tooth is a safer method since the wire can be recovered in a week or two. The involvement of the tooth socket in a fracture of the jaw is a complication which needs attention. If necessary drainage must be provided by an external incision under the border of the bone right up to the slit that enters the socket. The edentulous jaw presents its own problems but they can often be met satisfactorily by use of the dental plate or plates. But if the case is seen early such heroic measures are seldom required. It is essential to remove any teeth which lie either in or very near to the fracture line since they will act as foreign bodies, the open sockets thus created usually supply sufficient drainage. The importance of avoiding thorough suturing of the skin with thick sutures of silk or silkworm gut should be impressed on all casualty officers. When horse hair sutures removed in 48 hours or so are obviously insufficient

¹ Blair B. Brown, J. B. and Byars, L. T. (1935) *Surgery, Gynec. Obstet.* 64, 35A.
² Gillies, H. and Mowlem, R. (1936) *Lancet* 2, 1111.

³ Plastic Surgery of the Nose, 2nd edition, by J. Eastman Sheehan. London: H. K. Mulholland, 1936. 246 pp. 17s. 6d.

to retain the tissues in accurate apposition, much can be done with subcuticular stitching which is nowhere more valuable than on the face. Subdermal interrupted sutures of very fine silk may be inserted in deep wounds if the ends of the suture are left protruding from the corner of the wound to allow of the knot being subsequently discarded. Adhesive plaster is often better than any suture, and injuries of the lips can sometimes be repaired from the mucous surface with adhesive plaster to hold the skin edges. It is sometimes unwise to bury catgut in the lip and the repair may be effected by fine silk or silkworm gut for skin and fine catgut for muscle and mucous membrane.

HYPERTONIC SUCROSE

INTRAVENOUS injections of a hypertonic solution of dextrose—or sodium chloride—are commonly employed in the treatment of states of raised intracranial pressure. The fall in the intracranial pressure which results from such an injection has been measured in experiments upon animals and by direct manometric observations in humans, the reduction of pressure has been found to be more conspicuous when the pressure is considerably above normal. This form of treatment is not always successful in effecting clinical improvement, and it is well recognised that after a short interval of time a relapse is liable to occur which may leave the patient in a more serious state. There is experimental proof that such relapses are due to a reactionary rise of the intracranial pressure at times to a figure above its former value. This reactionary rise indeed constitutes a serious drawback to the method of treatment, although repeated injections may be given to obviate it. If sucrose is substituted for dextrose, hypertonic solutions are found to possess a similar osmotic property of reducing the intracranial pressure, but without the objectionable reaction. Following the intravenous injection of hypertonic dextrose, there occurs an increase in the quantity of hydrolysable carbohydrate in the cerebrospinal fluid which is not observed if sucrose is employed. It is likely that the mechanism of the reactionary rise in the intracranial pressure depends on this alteration in the composition of the cerebrospinal fluid and consequently of its osmotic pressure. HAHN, RAMSEY, and KOHLSTAEDT¹ have recently published a short review of this subject of "osmotic therapy," with special reference to the treatment of cases of brain injury. In a series of twenty-five such patients, they gave single or repeated doses of sucrose, usually 100 c cm of 50 per cent solution. Their experience leads them to consider sucrose a valuable substitute for dextrose, causing an effective reduction in the intracranial pressure with freedom from untoward after effects. They record in detail the notes of three cases treated in this manner. The injections noticeably improved the patients' colour, respiratory rhythm, and state of consciousness, and reduced the systolic and diastolic blood pressures.

The authors consider that criteria such as these are as dependable as the unequivocal information obtained by spinal manometry. They note that in the unconscious patient, the too frequent injection of hypertonic solutions may lead to dangerous dehydration, owing to the resulting diuresis. We would add that intravenous therapy should not be resorted to indiscriminately in cases of injury to the brain, some of these cases have an abnormally low intracranial pressure, a state which might be aggravated by this form of treatment.

THE SHORTAGE OF VETERINARY SURGEONS

IN the April issue of the *Veterinary Journal* a special educational number, there are points of great interest not only to boys seeking a career and their parents or advisers, but to all practitioners of medicine, from their position as guardians of the public health. Here the two branches of medicine, the human and the veterinary, play individual and combined parts, and any shortage in the total number of the veterinary body may reflect seriously upon the joint efforts. For the diseases of animals which are communicable to man are far spread in their evil influences. In this country anthrax, glanders, and rabies are now fortunately rare if terrifying spectres. Their eradication is mainly due to the control exercised by the veterinary department of the Ministry of Agriculture and Fisheries over their respective sources of origin, bovine, equine, and canine. It is to be hoped that we shall never again in this country have to fear these terrible menaces to man, but this security depends upon the continuance of the present keen veterinary inspection at each port where animals are allowed to land, as well as on quarantine laws and those governing the importation of animal products. Efforts directed towards prevention of the spread to humans of brucella infections and of foot and mouth disease must also be recalled. In the inspection of meat for human food the man who must by virtue of his training know most about the matter is the veterinary surgeon. He is the one best qualified to detect disease in the food animal before slaughter and to guarantee the soundness of the flesh when dressed for human consumption. And in the present fight against tuberculosis, which is an uppermost theme in every mind, the medical man works with the veterinarian, and only through such collaboration can measures of prevention be considered or a successful conclusion to endeavour be anticipated.

The editor of the *Veterinary Journal* draws attention to the shortage of veterinary surgeons throughout the country and the difficulties which exist in obtaining the help of qualified assistants. This is to be attributed largely to the openings existing in the Colonies, and the recently formed Veterinary State Service, whose most urgent duty—the eradication of the tuberculous cow—absorbs many workers. It is necessary to bear constantly in mind the fact that every year between 2500 and 3000 deaths of children under 5 years of age are traceable to the drinking of tubercle infected milk.

¹ Hahn F, Vernon Ramsey, Frank B, and Kohlstaedt Kenneth G (1937) *J. Amer. med. Ass.* 108 713

If reliance is placed upon many published statements there are some million tuberculous cows in Great Britain and Ireland while in many districts the dairy herds are infected to the extent of from 30 to even 60 per cent. As recently as last Tuesday Lord Dawson reminded the House of Lords in connexion with the present need for pasteurisation of milk that the decline in mortality from bovine tuberculosis had not kept pace with that from the human form of infection. If an intensified effort to eradicate the tuberculous cow is a great task before the veterinarian we are reminded how varied and important are the other directions in which his services are required in the promotion and protection of public health. The shortage of qualified veterinary surgeons is therefore a matter of real concern. The young man entering the

veterinary profession to-day will find that he has joined a service which is increasingly needed and valued the whole world counts on his help. But the more this is so the more evident is it that the educational course must become increasingly comprehensive and the tests to be satisfied grow harder. An extension of the curriculum has already been made and university courses are running concurrently with those connected with the practising diploma but the danger of discouraging candidates by insisting on too prolonged and arduous a course of study must be borne in mind. Students entering the veterinary profession now will command better material rewards than has been possible in the past as there are almost limitless possibilities of promoting the welfare of the human as well as the animal kingdom.

ANNOTATIONS

RADIOTHERAPEUTIC HOSPITAL DEPARTMENTS

THE assumption which pervades the official memorandum on provision of radiotherapeutic departments in general hospitals just issued¹ is that any discussion in general terms as to the place of surgery, X-ray and radium therapy in the treatment of cancer is obsolete. In about 40 per cent. of the cases of malignant disease admitted annually to hospitals the tumours are in the so-called accessible organs, the term accessible being used to define those which are most amenable to treatment by radiation or a combination of it with surgery—viz. uterus, mouth, skin and breast. Radiation methods are also being tried with varying degrees of frequency and success for a proportion (here estimated as about 10 per cent.) of the patients with cancer in other regions. Since much can be done in the way of palliation by radiation methods no sharp distinction can be drawn between cases treated with or without hope of permanent benefit. The need for facilities for treatment by both forms of radiation methods—radium and X-rays—as well as for operative surgery in a general hospital which claims to give an adequate cancer service is now recognised and the problem is narrowed to the calculation of the size of hospital which may be expected to yield enough cancer patients to make reasonably full use of radiation facilities. Lieut. Colonel Smallman who has compiled this memorandum for the Ministry of Health estimates this at a hospital of the order of 300 beds of which some 30 to 40 might be expected to be required by cancer patients of the treatable types. The necessary provision of radium for a hospital of this size is put at about 1.0 gramme of radium and for deep X-ray therapy two or three tubes working at a voltage of 200–250 kilo volts and two model layouts for a department of this order are detailed with plans. Provision of larger masses of radium for distance therapy by so-called bombs is omitted from consideration as being in a stage of development which makes it suited only to the larger centres. But attention is given to the choice, training and organisation of a unit which will provide the necessary team work in the absence of a director—still very difficult to find—who is expert at all three branches of treatment and is able also to supervise the follow up

department and the collecting of records in suitable form. Apart from the internal organisation of centres, which will make an efficient cancer service available throughout the country arrangements must be made for cases of cancer admitted to the smaller hospitals to be transferred to those with radiation facilities without undue delay when such transference seems desirable. The difficulties to be surmounted before this sort of scheme can be got into working order are fully recognised by Colonel Smallman and a study of his discussion of the issues involved will convince those who have the responsibility for hospital services that there is no excuse for delay in organising a network of fully equipped centres to serve those districts which still need them. In a preparatory note Sir Arthur MacNalty acknowledges the courtesy of a number of physicians and surgeons who have made useful suggestions after considering the memorandum which he believes to represent a consensus of authoritative medical opinion on the subject of radiotherapeutic hospital departments.

THE ROYAL SURGICAL AID SOCIETY

THE Royal Surgical Aid Society in the course of 75 years' activity has provided well over a million patients with urgently needed surgical appliances. It has since the opening of the century received Royal patronage and the occasion of the Coronation is being taken to make a departure which should lead to an extension of its valuable services. The plan of work is that the patient obtains a certificate from a surgeon of fitness for aid and then collects from subscribers to the Society the number of letters of recommendation specified as necessary. An initial subscription of half a guinea or a life subscription of five guineas entitles the subscriber to two recommendations per annum the number of recommendations increasing in proportion to the amount of subscription or donation. That is the present method but in order to mark the extent of the celebration the committee of the Society propose to double the usual number of recommendations in respect of all special Coronation donations during the month of May. The increase will be for those whom the Society can help by the gift of a loan which will mean a boon to many suffering from lack of funds for aid are always for the most part dealt with. Study of the figures for the year 1936 reveals something of the extent of the work of the Society's work. During the year 1936 the

¹ Cancer Memorandum on Provision of Radiotherapeutic Department in General Hospital. By A. H. Smallman (R.L.S. D.304. 31.1). Rep. Med. Adm. Serv. Conf. No. 79. London: H.M. Stationery Office, 1937. Pp. 3. 7d.

obtained help through the Society, and the appliances supplied totalled 35,263. Requests received from the distressed areas were so numerous that a special fund was created to deal with them, and a successful appeal was launched enabling special grants to be made to all authorised distressed area cases.

A valuable aspect of the work of the Royal Surgical Aid Society is that, while relieving much distress, it enables the benefactors who would otherwise be chronically handicapped to lead normal and useful lives. The annals of the Society are full of such promising histories, and every day applications are received where similar fortunate issues might be anticipated. In the L.C.C. housing estates preference is being given to tenants having delicate families, who thus form fields where surgical equipment is sadly needed. The Surgical Aid Society hopes in the Coronation year to receive support enabling it to help every suitable case from these areas.

THE BLOOD GROUPS IN AFFILIATION CASES

THE discovery of four, and later of twelve blood groups provided means of differentiating to some degree between the blood of different persons. Ever since it was discovered that the group characters are inherited according to unvarying rules, jurists have considered using this knowledge in the determination of affiliation suits. In most civilised countries the law requires the father of an illegitimate child by a single woman to contribute to its maintenance. Accusations of paternity are difficult to prove and the law of this country is satisfied with credible evidence by the mother corroborated in some material particular, provided that the evidence of the man does not refute it. A method of reaching greater certainty is therefore desirable.

The Medico Legal Society discussed on April 22nd, under the chairmanship of its president, Mr Ainsworth Mitchell, the practical and legal possibilities of using blood groups in evidence. Dr G. Roche Lynch explained the nature of the twelve groups formed by combinations of the agglutinogens A, B, M, and N. He explained that almost all the original weaknesses of the laboratory methods have been recognised and abolished and that in experienced hands the tests are as nearly infallible as any scientific tests can be. Dr David Harley expounded the rules by which the blood characters are inherited, and maintained that they are so completely authenticated as to be absolutely trustworthy. They state, shortly, that a child cannot inherit a blood character not possessed by either parent, and, moreover, that an O child cannot have an AB parent and vice versa. Mr D. H. Kitchin pointed out some of the difficulties in the way of the legal exponents of the tests. Their cost, he said, puts them beyond the means of the poor men who are usually the defendants in affiliation proceedings. He had little doubt about the need for them, and strongly opposed the view, which is held even in some legal quarters, that the law only requires reasonable proof that intercourse has taken place at the proper time, and not proof of biological paternity. It is common knowledge that women of easy virtue who find themselves pregnant not infrequently choose the man who is most likely to be able to afford the maintenance of their child. At present, as Mr Kitchin pointed out, a bench of magistrates has no power to order the woman to undergo the test nor even to refuse her application because she will not. If all three bloods are typed and the results acquit a man, he still has to pay a considerable fee to the pathologist to come and give evidence.

It is not possible yet to say what the attitude of magistrates is likely to be towards blood group evidence, for it has only been brought before them once or twice and then has never pointed to an acquittal. There is no doubt, as Mr Kitchin said, that the first case in this country in which non-paternity is definitely established will be very interesting and important. If the bench were to refuse to acquit the man in appeal would he to quarter sessions and thence to the Divisional Court, and an opportunity would be given for a full argument of the validity of the tests in a court. Their establishment in one or two conclusive cases would pave the way for the legislation which would be necessary before they could attain their rightful place in the administration of the Bastardy Acts. It would be necessary to place some compulsion on the mother, as Judge Earengay, K.C., put it, the bench should have power, if the mother refused her co-operation, to grant an indefinite stay of the proceedings. It would also be necessary to provide that, unless one of the parties particularly desired the oral evidence of the pathologist, his certificate should be conclusive proof of the result of the test. Further, it would be necessary, to get the full value from the tests, to give the magistrates power to have them done at the public expense.

The most important feature of the discussion was the strong support of the movement by Sir Travers Humphreys, whose position and reputation as a judge of the King's Bench Division give his opinion authority. He said that the whole legal profession would welcome the blood group tests if they were shown to further the cause of justice. He saw no real difficulty in saying in an Act of Parliament that a woman shall, if the court so direct, submit to a simple, painless operation. He also considered that the bench should have power to appoint an expert to do the test, just as a High Court judge is now allowed, under the New Procedure, to appoint an expert to report on any matter of scientific difficulty. Both he and Sir Ernest Graham Little considered that the future of the blood group tests in law depended very largely on the agreement of the medical profession that they are trustworthy.

THE PROMOTION OF LACTATION

THE influence of various hormones upon lactation is being studied closely at the present time from several aspects, of which that represented by agriculture is of great economic and commercial importance. S. J. Polley at the National Institute for Research in Dairying, Reading, has shown in conjunction with F. G. Young¹ that prolactin, one of the many hormones derived from the anterior lobe of the pituitary, can greatly increase the production of milk. Two dairy shorthorned cows in declining lactation were used for the experiment. One received 15 daily subcutaneous injections of 1 gramme of prolactin in 50 c.c.m. of water, the other was given similar injections of distilled water. The cow receiving prolactin developed an increase in milk yield, rising to a maximum of 30 per cent above the original daily yield. The percentage of fat in the milk remained unchanged while the injections were being given, while the percentage of non-fatty solids in the milk was considerably increased during this period and for some time afterwards. Polley has also studied the effect of oestrogenic hormones on lactation.² Four Guernsey cows were given injections of oestron, partly in solution and partly suspended

¹ *Chem. Ind. Rev.* 1937, 56, 86.

² *Biochem. J.* 1936, 30, 2262.

in warmed castor oil, supplemented by a small amount of a solution of dihydrofollicular hormone benzoate in sesame oil (the Progyron B Oleum forte prepared by Messrs Schering). The injections were intramuscular and preceded by a control period of at least 14 days and the following calculations were made for successive three-day periods: mean daily milk yield, mean daily production of milk fat, mean daily production of milk non fatty solids, mean percentage of fat in milk and mean percentage of non fatty solids in milk. The results showed that oestrogenic hormone injections were always followed by a considerable diminution in milk yield. The inhibition was temporary and was obviously correlated with a transient but considerable increase in the level of oestrogenic hormone in the blood. An attempt was made by giving to one cow simultaneous injections of the oestrogenic hormone and prolactin to determine whether the inhibition is exerted primarily on the anterior pituitary or whether it is a direct effect on the mammary gland; unfortunately the results were inconclusive. The effects of the oestrogenic hormone on the composition of the milk were remarkable suggesting that the treatment had conferred upon the mammary gland the power to synthesise milk constituents at a higher rate than before treatment. An increase in concentration of solids in the milk secreted lasted for two or three months. These investigations have an obvious interest for those concerned with promoting the breast feeding of infants though the direct application of the results of such studies to the human subject would not be easy especially in view of the superstitions which have accumulated round the subject of breast feeding. P. J. Greenway,* who is the systematic botanist at the East African Agricultural Research Station in Tanganyika Territory has recently recorded some interesting observations on the artificial induction of lactation in women by administration of various concoctions both by mouth and by local injection. He records over a dozen plants which have a reputation in the territory as galactagogues and there seems little doubt that some activity in the breast even of women who would not otherwise be lactating can be induced by their use. Greenway suggests that the plants he mentions may have some action on the hormones which control lactation.

THE EFFECT OF VENOUS STASIS ON BONE REPAIR

THE acceleration of bone growth in conditions of venous stasis, clinical as well as experimental is discussed by Herman L. Pearse and John J. Morton† in the first issue of a new American journal which we have already had occasion to notice‡. The association between chronic cardiac and pulmonary disease and bone changes in the fingers—the well known club fingers—has long been recognised and Pearse and Morton mention various local circulatory changes associated with haemangioectasis, arteriovenous aneurysm and meningioma which have been held responsible for overgrowth of bone. They have conducted experiments on dogs by which they claim to have demonstrated a direct acceleration of bone repair in artificially produced defects in the fibula by ligation of the popliteal vein. These experiments were first described in 1930 but since they were challenged by J. A. Key and F. Walton further

work has been undertaken. Pearse and Morton have now done 28 experiments on dogs fibulae and those have shown an increase in the rate of healing in 25 on the side with venous congestion. The progress of repair is controlled by X-ray examination. Great care is necessary to maintain the continuity of the periosteum as failures in bony union occur if muscle is allowed to interpose between the fragments. Bleeding is avoided by approaching the fibula through the plane of the intermuscular septa and care is needed to distinguish the popliteal vein which it is intended to ligature from the lesser saphenous vein. The requirements laid down by Pearse and Morton for these experiments are that post operative splinting shall be avoided, that functional disability shall be minimised, and that damage to the circulation shall be absent. Failure to reproduce their results are attributable in their opinion to some imperfection of technique. They have found however that repair of bone in young animals is so rapid that it is difficult to accelerate it further and this also may account for certain anomalies. The object of this study was to explain the clinical results reported by other observers and to suggest that venous stasis has a place in the treatment of fractures in the human subject.

THE CHEMOTHERAPY OF STREPTOCOCCAL INFECTIONS

A FLOW of literature dealing with the therapeutic use of Protosil and sulphonamide is now in full current. What is more particularly needed at the present stage is guidance on such matters as dosage, the type of preparation to be used and the effect to be expected in different types of infection by *Streptococcus pyogenes*. A solid contribution on these lines is made by Long and Bliss† of the Johns Hopkins Hospital, Baltimore who have treated 10 cases of such infection involving various parts of the body. Among these there were 4 deaths, two being cases of Ludwig's angina, one a septicæmia in extremis and the fourth an infant with peritonitis. The recoveries included 22 cases of erysipelas and cellulitis, 27 of acute infections of the upper air passages including 8 of scarlet fever, 9 cases of otitis media and smaller numbers of septicaemia, purpural fever and other miscellaneous conditions. Long and Bliss are convinced of the efficacy of the treatment. They have used both protosil injections and oral sulphonamide; their dosage is heavy (up to 5 grammes of the latter daily), and they report few signs of toxic action including only three examples of sulphuric globulinæmia. That an adequate concentration of the drug can be maintained continuously in the blood and tissues by present methods of administration is indicated by the useful work of Marshall Emerson and Cutting‡ who have studied the absorption in vivo distribution and excretion of sulphonamide given either by injection or by the mouth. This is a straightforward pharmacological study of a kind which is apt to find a too isolated place when enthusiasm for a new remedy outstrips the orderly progress of its study. The investigations which were carried out in dogs show that whether the drug is given by the mouth by subcutaneous injection or intravenously a high concentration is maintained in the blood for six hours and diminishes only slowly owing to the very gradual rate of elimination in the urine. It was likewise shown that a concentration in

* *J. Agr. Med.* J. February 1937 p. 318

† *Am. J. Surg.* 1937 p. 106

‡ *Lancet* March 13th 1937 p. 410

† Long L. H. and Bliss H. Emerson A. (1937) *Arch. S. Ch.* 3, 1

‡ Marshall F. R., Emerson A. and Cutting W. C. (1937)

J. Amer. med. Ass. 108, 933.

equivalent to about half that existing in the blood is attained in the cerebro spinal fluid, a fact of great importance in relation to the possible treatment of streptococcal or meningococcal meningitis.

Another aspect of research on these drugs is concerned with their effect on bacteria other than streptococci. It will be recalled that Dr G. A. H. Buttle and his colleagues recently reported in this journal² experiments from which it appears that sulphonamide has a remarkable action, in mice, on infection by typhoid and paratyphoid bacilli, and lesser degrees of effect in infection by a number of other bacteria. Among these was the pneumococcus, and the findings in connexion with this organism were distinctly less encouraging than those reported by Rosenthal.⁴ There is a discrepancy here which has yet to be explained, and for the time being a proper inclination would be rather to accept the results of the more experienced workers in this field. On the whole it seems advisable for the present not to build serious hopes on these wider explorations: there is no shorter road to discredit of any drug than its indiscriminate use. Sulphonamide cannot be expected to do everything, and the detailed knowledge of antiseptic action which has been accumulating for years all points to a curious specificity among the most active agents we possess, some bacteria being highly susceptible and others comparatively resistant. Now that effective chemotherapy is shown to be possible in at least one bacterial infection, it may be that altogether other chemical weapons will be forged with which to combat others.

INSTITUTE OF CHILD PSYCHOLOGY

Too much stress is sometimes laid, in psychological work with children, on the prevention and treatment of neurosis—i.e., on pathology rather than on normality. The Institute of Child Psychology believes in an approach based upon an intimate knowledge of all aspects of childhood, a direct study of the children themselves. Its staff have worked out some interesting methods peculiar to the Institute for treating children suffering from all kinds of disturbances of their emotional life, from chronic physical disorders, from maladjustment at home or at school, and from educational difficulties. One of their most successful methods is play therapy. They are concerned to make their methods available for other centres and to standardise them for general use. The report for the past year says that great progress has been made in classifying and consolidating these methods and there is evidence that much interest is being aroused in them. The staff also accumulate the knowledge they acquire about the reaction of children to life. In May the first number of the Institute's News Bulletin appeared, and the bulletin is now self supporting at a nominal annual subscription. Two group discussion meetings were held and courses of public lectures were well attended. During the autumn members attended a course of lectures by Prof. R. G. Collingwood on the study of fairy tales. The Institute sends its play therapists to a special clinic at the West End Hospital where children are treated for night terrors, anxiety, speech difficulties and other disorders of health and conduct. A special department treats children individually instead of in groups and provides useful training for physicians who wish to learn the psychotherapy of childhood. Children are examined for physical ailments in a medical department and an effort is made

to give them the treatment they need. The educational department collects and coördinates school reports, arranges special coaching and studies the relationship between emotional inhibition and freedom to use the intelligence. The social worker dealt last year with 130 cases, including the heavy work of after care, and of finding suitable help for children who could not be treated at the Institute. Another department cares for the physical re-education of children by rhythmic exercise. Parents are welcomed at the institute, which recognises their importance in the child's problems and encourages them to deal with their own. A generous donor has promised to buy the Institute a larger house as soon as it can find a suitable building.

THE PHOSPHATASES

THE phosphatases are assuming a steadily increasing significance in several departments of physiological and medical research and papers on the subject are multiplying rapidly. As usual these find their way into a wide variety of journals, not all of which are readily accessible to medical workers. Mr S. J. Folley, Ph.D., and Prof. H. D. Kay¹ of the National Institute for Research in Dairying, Reading, have performed a useful service by summarising in tabular form what is known about the properties of the various phosphatases, their distribution in mammalian tissues and fluids, and the changes which they exhibit in natural or experimental disease. They have compressed a great deal of information into a surprisingly small space and their review should be very helpful to anyone who is seriously interested in these enzymes.

JOHN BLAND-SUTTON

As a supplement to the *Journal of Obstetrics and Gynaecology of the British Empire* for the April issue there is published a biographical essay on John Bland Sutton written by his colleague and close friend, Sir Comyns Berkeley. The story, admirably told, wanted telling in detail, because Bland-Sutton's career—his successes and set backs, his friendships and animosities—was sometimes puzzling even to his friends. This record, a full and moving one, while setting out in a coherent manner its subject's personality, gives interesting pictures of professional and hospital organisation at the different epochs. Cooke's popular private school of anatomy was flourishing in the 'seventies, and Bland Sutton attended it and was invited to be the demonstrator. But he refused the post, tempting to an impecunious student, and offered himself, with 100 sovereigns in a bag, as a perpetual student at Middlesex Hospital. He joined as a prosecutor, for his work at Cooke's school had been thorough, and throughout all the earlier stages of his career at Middlesex he was teaching and coaching his contemporaries. This precocious position as instructor explains the simplicity and directness of his writings and public utterances—he had taught himself to give prominence only to the things that mattered, and to provide explanations that could be followed at once. He won all the prizes at the hospital for which he competed but was unable to take a house surgeon's post, because not only was it an unpaid appointment but it necessitated the disbursement of a fee. He became instead assistant curator of the hospital museum, and worked so well that he was offered more important posts of a similar kind. These he refused, concentrating

² *Lancet* March 20th 1937 p. 681.

⁴ Rosenthal, S. M. (1937) *Publ. Hlth Rep., Wash.* 52, 192.

¹ The Phosphatases, *Tabulae Biologicae Periodicae* (W. Junk, The Hague) 1937 12 268-279.

on his aspiration to the surgical staff of the hospital. This materialised and Bland-Sutton's election as assistant surgeon was noticeable for two things. First he had never been an interne and secondly he was actually the first man trained at the Middlesex Hospital to be elected to the surgical staff of the hospital, the practice hitherto having been to draw for the staff from other and larger schools.

Bland Sutton's life was epitomised in an obituary notice in these columns. The fuller chronicle will be read with pleasure for not only is the story a very interesting one, but a vivid picture is presented of the changes that have taken place in medical education and hospital organisation since Bland Sutton was a student.

THE MEDICAL ANNUAL

We always welcome the Medical Annual,¹ and it continues to deserve its welcome. It is in the main of course a set of summaries of the previous year's most important practical papers in the world's medical literature, prepared by a number of able and distinguished contributors. But it avoids with conspicuous success the dull stodginess of most volumes of abstracts. This is partly because its contributors are free to select being under no obligation of comprehensiveness and partly because they know and understand the readers for whom they write—namely those general practitioners who are still willing to learn what is new and good in medicine and eager to give the benefit of it to their patients. The result is in most of the articles an easy clear and friendly style closer to conversation than to the language of the text-book, and this with the reviewers' skill in presenting new things in their relation to what is already familiar gives the manual a character and an atmosphere of its own. It is not merely a work of reference—one can enjoy spending an evening reading straight through it. The editors have the impression that last year was a year of steady advance in many fields without spectacular achievements and they remark that the tendency continues for the clinical and the laboratory aspects of medicine no longer incompatible to become properly compounded in the doctors' mind and practice. That process is no doubt slow but it needs judgment and a sense of proportion qualities which make the Medical Annual's own contribution to it a very useful one.

THE TREATMENT OF ADDISON'S DISEASE

DESPITE great advances in our knowledge of the function of the suprarenal glands the treatment of Addison's disease remains very unsatisfactory. This is the more depressing since both the preparation of the cortical hormone and the discovery of the rôle of salt held out great promise of therapeutic application. The reasons however are not far to seek. In the first place, as Borst and Viereira² point out failure is naturally to be expected if the Addisonian syndrome has been caused by generalised tuberculosis which in itself would ultimately have proved fatal. A second difficulty to which they also allude has been the failure of manufacturers to supply cheap standardised preparations of the hormones. A third difficulty is the seemingly manifold action of the cortical hormone or hormones. This

is brought out by Grollman³ and by other investigators. The arterial blood pressure inorganic salt metabolism carbohydrate metabolism renal function absorption from the intestine,⁴ resistance to infection, hæmorrhage and toxins all seem to be implicated and no one knows at present the relative amounts of the hormone or hormones required to restore each or all of these functions to normal. Add to this the possibility of variations in the patient's own resistance or reaction and the explanation of the therapeutic failures is complete. The case described by Dr Anderson and Dr Lynam in our present issue illustrates the difficulties that attend treatment. This patient who had been rescued from almost certain death from collapse and salt deficiency in March 1936 by cortical hormone and salt, died apparently from spontaneous hypoglycæmia in October of the same year.

It is clear that once the diagnosis of Addison's disease has been made the prognosis must still be guarded. It is also clear that haphazard treatment is never likely to be permanently successful and that the best hope for these patients lies in making a full investigation of their syndrome at frequent intervals, and in varying their treatment from time to time in accordance with the findings.

THE BRITISH ASSOCIATION

NOTTINGHAM is the place and Sept 1st-8th the time of this year's meeting of the British Association. The president is Sir Edward Poulton F.R.S. and his inaugural address will deal with the history of evolutionary thought as recorded in the meetings of the association. Medical men who preside over sections are Prof F. A. F. Crew (Zoology) and Dr E. P. Poulton (Physiology). Prof. H. Hartridge, F.R.S. will give a public lecture on Illusion of colour. Among very many subjects of interest to medical men are chemistry and medicine the changing distribution of population the contribution of physiology to the health of the individual and the community tests for colour defect recent advances in genetics and cytology problems of child guidance air-conditioning high altitude flying and the relation of grass to the national food-supply. Mr H. G. Wells presides over the section of educational science and will speak on the informative content of education. Further particulars and the provisional programme may be had from the secretary at Burlington House London W.I.

The annual meeting of the British Medical Association will open at Belfast on July 16th under the presidency of Prof R. J. Johnstone F.R.C.S. The council of the Association have recommended that Dr Colin Lindsay be elected president for next year's meeting which will be held at Plymouth.

Grollman, A. (1936) *The Adrenals* London.
⁴ Verzar, F. and McDougal, J. F. (1936) *Aspiration from the Intestine* London.

THE ROYAL LYS HOSPITAL.—A clinical society has been organised in connexion with this hospital. The next meeting of the society will be held on Tuesday May 4th at 8 p.m. at the hospital when Dr J. Rowland Hill will read a paper on "neuro-muscular optics," illustrated by cases. All medical practitioners will be welcome for further particulars apply to the hon. secretary J. Minton, Royal Lys Hospital, Southwark.

¹ Medical Annual, 1937. Edited by H. Lethley, Tilly MA, M.D. (Oxon.), F.R.C.P. and A. Fendle, Esq. M.D. F.R.C.S. F.R.C.S. Bristol, John Wright and Sons, London. (Impkins Marshall) 17, 705, 20s.

² Borst, J. G. and Viereira, H. J. (1937) *Acta med. scand.* 91, 127.

SPECIAL ARTICLES

ALUM-PRECIPITATED TOXOID IN
DIPHTHERIA PREVENTION

BY J C SAUNDERS, MD NUI, D.P.H.

MEDICAL OFFICER OF HEALTH CORK

THE work to which these notes relate was undertaken in order to test the possibility of immunisation by a single injection and may be regarded as a sequel to previous work (Saunders 1932) in which multiple doses of alum precipitated toxoid (A.P.T.) were used. The reactions experienced were discussed in a subsequent article (1933), and arising from the fact that in a series of 579 children four sterile abscesses had developed, it was deemed advisable to suspend the issue of this prophylactic while further laboratory investigation was carried out with a view to producing a purer A.P.T., which would be less liable to cause unpleasant reactions and (if possible) free from the liability to produce abscesses. The A.P.T. used by us up to this point was that produced in the Wellcome Research Laboratories according to the method of Glenny and Barr (1931). Personally, I was quite satisfied with the results obtained, particularly in the immunising efficiency of the product, but those in respect of reactions were not regarded as so satisfactory by the laboratories and the result was the temporary suspension of supplies.

PRESENT PROCEDURE

The period covered by this earlier work was from June, 1931, to December, 1932, and it was not until December, 1934, that further supplies of A.P.T. were received. A description of the method of preparation will appear in another communication from the Wellcome Laboratories.*

The period covered by the present work extends from that date to December, 1936, and the procedure adopted was as follows—

1 Children under 7 were not subjected to a preliminary Schick test. They received 1 c.cm. of A.P.T. on the first visit and were instructed to attend again in five weeks for test.

2 Children over 7 received, on first visit, concurrent Schick and Moloney tests. The dilution of toxoid used for the Moloney test was 1 in 100 and readings were made in three to four days afterwards. The disposal of these cases was as follows: (a) Schick negative—no treatment; (b) Schick positive and Moloney negative—1 c.cm. of A.P.T. (retest in five weeks); (c) Schick positive and Moloney positive—1 c.cm. of floccules (T.A.F.) repeated in two weeks and retest in five weeks.

All prophylactic injections were given by the subcutaneous route.

The majority of children under 7 are susceptible to diphtheria and it was felt that the exclusion of the preliminary test reduced injections to the minimum. Indeed the great virtue of immunisation by A.P.T. reposes in the claim that it is possible to protect children by a single dose, and if this claim can be substantiated a big advance has been made. In my experience no method involving the use of multiple injections can hope to achieve complete treatment for all cases attending, and it will be found that when the final tabulation is made con-

siderable leakage has taken place. In our case failures to complete treatment varied from 32 per cent in 1932 to 8.8 per cent in 1933. In 1935—the first complete year in which A.P.T. was used—the leakage was calculated to be only 0.72 per cent. A defection rate of 32 per cent is serious and any scheme characterised by such figures must be written down as a failure. The main, if not the only, cause of such failures is the objection inherent in so many people to hypodermic injections, and the reduction of such injections to the lowest possible minimum is therefore most desirable, especially if it can be shown that there is no reduction in the degree of protection conferred.

The group dealt with here comprised originally 3189 children, including 398 who were found to be negative to the preliminary Schick test and did not require treatment, and 634 others who received treatment but failed to come for the final Schick test. There is, therefore, a residual group of 2157 who received treatment and were Schick tested after it, and it is this group which is concerned in the analyses which follow.

Results of Treatment

It was decided in the first instance to review the results of the Schick test as a whole without any reference to the period that had elapsed between treatment and test, and the result is set out in Table I. With regard to the first age group (0-2 years) it has to be stated that the great bulk of the

TABLE I
Final Results of Schick Tests after Treatment

Age-group	Cases	Schick test		Proportion negative (per cent.)
		Positive	Negative	
0-2	446	7	439	98.4
2-4	889	6	884	99.4
4-6	516	5	511	99.0
6-8	224	2	222	99.1
8-10	60	3	61	93.0
Over 10	16	1	15	93.1
Total	2157	23	2132	98.7

children were over 18 months, as it was only in exceptional instances that we treated children under this age. The proportion of negative reactions varied from 99.4 per cent (in the 4-6 group) to 93.1 per cent (over 10), but in the latter group the number of children is so small that the resulting figures become unreliable. Taking the group as a whole, it is found that after treatment 98.7 per cent of the cases yielded negative reactions, which is at least as good a result as could possibly be hoped to be obtained with any prophylactic of the multiple injection type.

The question, of course, arises about the Schick conversion rate—i.e., the proportion of cases that have been converted from Schick positive to Schick negative. As stated above, primary tests were not performed in children under 7, who comprise the great bulk of the cases, and consequently a direct answer cannot be given in their case, but it is possible to adduce at least approximate figures. Since 1929 over 4000 children in Cork have been subjected

* The materials used by us throughout were supplied by the Wellcome Research Laboratories, Beckenham, and I am indebted to Dr R. A. O'Brien, the director, for supplies sent gratis in the earlier stages of the investigation. Four different batches were used the L.F. value of which varied from 20 to 50.

TABLE II—RESULTS OF SCHICK TESTS AFTER TREATMENT
Analysed according to Interval between Treatment and Testing

Age-group	Cases	RESULTS OF SCHICK TESTS.														
		5 weeks			6 weeks			7-9 weeks.			10-14 weeks.			Over 14 weeks		
		Pos	Neg	Per cent Neg	Pos	Neg	Per cent Neg	Pos.	Neg	Per cent Neg	Pos	Neg	Per cent Neg	Pos	Neg	Per cent Neg
0-2	446	7	188	96.4	—	93	100	—	56	100	—	33	100	—	70	100
2-4	889	2	333	99.4	1	108	99.4	1	121	99.2	—	85	100	1	132	99.2
4-6	616	3	109	95.5	2	100	98.0	—	60	100	—	40	100	—	103	100
6-8	224	1	94	95.9	—	38	100	1	33	97.0	—	19	100	—	40	100
8-10	66	4	29	87.8	—	14	100	1	6	85.7	—	4	100	—	8	100
Over 10	16	1	6	87.7	—	—	—	—	1	100	—	1	100	—	4	100
Total	157	18	840	94.4	3	443	99.3	3	301	99.0	—	183	100	1	35	99.4

to the primary Schick test and it has been found (Ann. Rep 1935) that the proportion of positives has varied from 78.2 per cent. in 1929 to 44 per cent. in 1935. Differential analyses (according to age groups) have been made since 1932 and the proportion of positive reactors in 0-5 years group has varied from 88.4 per cent. in that year to 60.8 per cent. in 1935 and the corresponding variation in the 5-10 years group from 60.1 to 40.5 per cent. We may assume therefore that about 60 per cent. of the 1851 children who comprise the first three groups of our present series—i.e. 0-5 years—were positive before treatment. This gives us a hypothetical group of 1224 Schick positive children of whom (from Table I) 17 remained positive to the secondary test. Thus we have a conversion rate of 98.6 per cent. which is the same figure as the proportion of negative tests yielded by the whole group.

A further analysis was made according to the period elapsing between treatment and test. The result is shown in Table II. In all cases an effort was made to get the children to attend for the test at the end of five weeks. 840 of them did so. It will be noted that no less than 94.4 per cent. were negative at the end of this relatively short period. If one excludes the two last groups (8 years and upwards) in which the figures are again very small the result is even better: the proportion of negatives then varying from 90.4 to 99.4 per cent. This is important. It indicates a very high conversion rate in a very short time. As we proceed to the longer time periods we note a more or less progressive improvement in which the proportion of negative reactions is never less than 99 per cent.

These results are much better than we had previously experienced with toxoid antitoxin (three injections) the highest negative rate being 89.7 per cent. at a ten months' interval (1932) and better also than those obtained in a group of 1081 children treated by us in 1933-34 with potent formol toxoid (two injections). In this case the proportion of negatives on retesting was 90.8 per cent. (work not published). The nearest approach we have had to such figures was with the earlier batches of alum toxoid that I previously reported (1932) but in that case multiple injection was used. It would hardly be surprising if such figures as these now reported induced some degree of scepticism and in fact more than once during the course of this work I have felt inclined to call in question the potency of the

toxin used for the Schick test but any uneasiness on that score was allayed by the results of the primary tests which were carried out concurrently. The reactions which presented themselves were in every way normally developed among this class. The great majority of the readings were made by myself and such as I did not see were read by my assistant Dr P. F. FitzPatrick who has had considerable experience in this work.

OTHER WORKERS' RESULTS

It is clear therefore that in this area a single dose of A.P.T. has been very effective as an immunising agent, and it remains to be seen how the results obtained compare with those in other places. Some of these are shown in Table III.

Isabellinski, Judenitch, and Lowzow (1936) also describe interesting results obtained in guinea pigs in which the treated animals were found to be resistant to 600 m.i.d. of diphtheria toxin. Koster (1935) comparing the results obtained with toxin-antitoxin, formol toxoid (F.T.) and A.P.T. (see Table III) concludes that A.P.T. gives a higher percentage of immunity than F.T. in eight to nine weeks after treatment but that the immunity conferred by the latter is more enduring. Leach (1936) describes the results of field immunisation carried out in rural districts in Austria and experiments to determine the relative merits of different antigens. He believes that unless depot material is present on high value toxoid has inferior immunising powers. It was found that 60 per cent. of the antigen was eliminated by the kidneys in twelve hours. This author's findings confirm the earlier work of Glenn (1930) and are confirmed by those of Schmidt-Burkhardt (1936) who describes experiments on groups of guinea pigs which were immunised in parallel with crude form of toxoid, A.I. (O.H.), formol toxoid and A.P.T. (prepared by the method of Glenn and Barr (1931)). The latter two antigens were found to be much superior to F.T. and the better results are ascribed to the absorption of the antigen and its slow subsequent release during immunisation. According to this author both the alum preparations gave rise to fewer undesirable reactions than crude toxoid.

In regard to animal experiments special reference has to be made to the important work of Farnham (1936a) in which is described the results of inoculation of guinea pigs with A.I.T. and the subsequent operative removal of the inoculated tissue and its reinjection into the guinea pigs. In this method the animals are all to have that even thirty-eight days after injection in which we gave evidence of containing antigen. Immunisation of alum content of the tissues at the site of injection was found that the content remains practically unchanged for at least two days after injection. The higher the first antigen was left in situ the longer the antitoxin titre is maintained at high level. These results suggest that an active

injected in relatively insoluble form serves as both primary and secondary antigenic stimulus or indeed, rather, acts as a continuous stimulus Elsewhere (1935b) the same author describes field work in Hungary with A P T on a large scale (see Table III)

TABLE III
Effect of A P T (Single Dose)

Authors	No treated	Age	Original Schick status	Interval before testing	Immunity rate per cent
Baker and Gill (1934)	1414	—	Not kn	2-3 ms	99
McGlinnes and Stebbins (1934)	2000 approx	—	Positive	2 ms and 1 yr	90
Walker (1934)	A 135 B 185 C 770 D 992	6-18 ms 7-12 yrs Under 1 yr 1-6 yrs	Not kn Positive Not kn	2-6 ms	100
Keller and Leathers (1934)	A 23 B 53	— —	— —	2 wks 4 6 Similar	60 95 100 Similar
Isabellinski Judenitsch, and Lewnow (1935)	245	—	Positive	6½ wks	90.8
Murphy (1935)	131	—	—	5 ms	93.1
Haine (1935)	1160	5-14 yrs	Not kn	9 wks	90
Naughten, White and Foley (1935)	A 130 B 240	— —	Positive Not kn	— 2 ms	— 90-95
Underwood (1935)	152	—	Positive	1 m	83.0
Kositz (1935)	A 175 B 335	— —	Positive	11-3 ms 8-9 wks	91.4 86.3
Faragó (1935)	2852	—	—	2 ms 1 yr	93.3 93.7 (of 2379)

kn = known ms = months

The authorities so far quoted have expressed favourable opinions in regard to the value of A P T, but not all observers have been so favourably impressed.

Frazer and Halpern (1935) in comparing the antitoxin response to one dose of A P T and three doses of unmodified toxoid found that the response to the latter was distinctly greater than to the single dose of A P T. In the A P T group, after 10 weeks 62 per cent had more than 1/100 unit of antitoxin per c cm. Whereas of the toxoid group 91 per cent had more than 1/100 unit per c cm. After 1 year only 19 per cent of the A P T group remained above 1/100 unit (cf findings of Faragó referred to above) while 91 per cent of the toxoid group remained above that level. Lai (1935) obtained only 62.6 per cent conversion rate after 5 months in 359 previously Schick positive children, but, in this case, it is possible that the poor result was due to using an antigen of low immunising power (0 Lf). Pansing and Schaffer (1936) investigated the duration of immunity in groups of children who had received a single dose of A P T. In the first group 462 positives were retested 28 days after inoculation and 84 per cent were found negative. The second group consisted of 445 positives retested after 60 days in which 86 per cent had become negative. The third group comprised 549 children who had been given 1 c cm of A P T and subsequently found Schick negative. They were retested at the end of 2 years and 42.2 per cent only were found to be still Schick negative. In a smaller series of cases Parish (1936) compared the results after two injections and one injection respectively of A P T. In the former case an immunisation rate of 100 per cent was obtained as compared with 64 per cent in one instance and 81 per cent in another in the case of single dose A P T. He draws attention to the low natural Schick negative rate (17.5 per cent to 20 per cent) in the communities with which he was dealing and considers

that such communities are not suitable for treatment by the single dose method. Recently Bousfield (1936) drew attention to an extremely low conversion rate (37 per cent) obtained by him in a small group of children treated with 1 c cm of A P T.

It is possible that the explanation of the discrepancy that appears to exist in the findings of different workers with A P T may be found in differing natural immunity rates. Variations may also be due to differences in the "antigenic quality" of the preparation and in the strength and purity of the antigen. There certainly has been a striking change in the natural immunity level of children in Cork over a number of years.

Of 1170 children (all ages) submitted to primary Schick testing in 1929-30 there were 78.2 per cent of positives, whereas in 1934 when 1474 were similarly tested the proportion of positives had fallen to 44 per cent. Differential analysis according to age groups carried out since 1932 has shown all groups to be affected in the change, but it has been most pronounced in the 0-5 years group (88.4 per cent to 66.6 per cent). In the group over 10 years the proportion has declined from 37.7 per cent to 30.3 per cent.

For some reason, therefore, the natural immunity rate of children in this area has been considerably raised and now stands at a comparatively high level which, according to the views of Parish and others as set out in a leading article in the *British Medical Journal* (1935), is a favourable indication for the use of A P T by the single dose method and may possibly explain why we have obtained such good results by this method in Cork. But it does not explain the comparable figures obtained in many other areas as outlined above and I am inclined to believe that those who have had a considerable experience of A P T in actual field work will probably continue to use it among suitable groups of children.

EFFECT ON DIPHTHERIA IN CORK

In my original article on the subject (1932) I expressed the opinion that alum toxoid (A M T) was superior to toxoid antitoxin mixture (T A M) in the prevention of diphtheria, that it induced immunity more rapidly, and that in epidemic periods, when rapid induction of immunity is essential, it was the best antigen. Our experience of epidemic diphtheria in Cork has afforded a unique opportunity of testing the truth of these assumptions and I believe they have been verified by the facts. Reference to the diagram makes what follows easier to comprehend. It is a graphical record of diphtheria notifications (by quarters) from 1925 to the end of 1936, showing the introduction of T A M in June, 1929, A M T in June, 1931, and continued until December, 1932, when it was temporarily suspended. F T was introduced in March, 1933, and finally A P T in December, 1934. Although there was a considerable abatement in the severity of the epidemic after 1931 the real decline set in in 1935 and is clearly shown in the graph. In my opinion the main factor here was the large number of children (particularly of pre-school age) whom we were able to immunise by the single dose method. Very similar figures to these were adduced by Prof B. Johan at the second International Congress for Microbiology in London in July, 1936 in relation to diphtheria incidence in Hungary. He showed tables and diagrams illustrating the pronounced reduction in the incidence in certain areas after the introduction of A P T. Prof Johan advanced as one of the reasons for the failure of anatoxin to stem the tide of epidemic diphtheria in the affected regions the fact that quite large

proportions of children failed to present themselves for subsequent treatment after the first injection (see *Lancet* 1936 2 277). This will probably have been the experience of most people using the multiple-dose method. It certainly has been ours in spite of intensive following up. In the present series no less than 634 children failed to come for the final test. This represents the considerable proportion of 22.3 per cent. and in a scheme involving more than one injection such cases would have to be written off as failures so far as induction of immunity is concerned. In this respect, therefore, it is clear that A.P.T. marks an important advance in diphtheria prophylaxis and if it can be shown that a reasonable degree of protection is induced by a single dose this prophylactic should play an especially important part in combating epidemic diphtheria when rapid and widespread protection becomes an urgent necessity.

Reactions

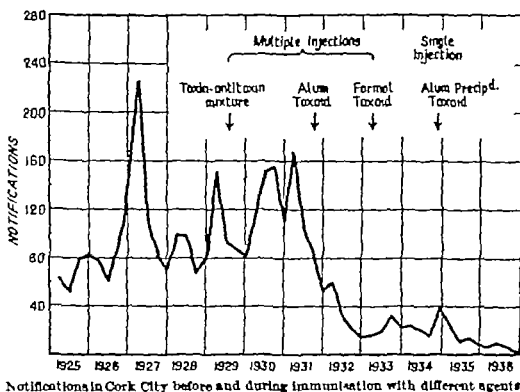
The reactions experienced with this lot of A.P.T. have been definitely less than with the older batches used some years ago and this is especially so in regard to abscess formation. Our procedure was to instruct parents to report again in the course of three or four days if there was any anxiety on the score of sore arms or general sickness. Very few of them did so. In addition when the children reported for the

constructed. The standards used were those adopted previously when using alum toxoid:—

- 1 *Slight*—Local reaction not exceeding 1 in. in diameter either with or without slight malaise
- 2 *Moderate*—Local reaction 1-4 in. in diameter with or without malaise
- 3 *Severe*—Any local reaction exceeding 4 in. in diameter with or without general reaction

It is necessary to allude again to the fact that in this area these reactions are not regarded in the serious light that they appear to be in England and consequently the findings must be taken with a certain amount of reserve especially when reliance has had to be placed on the views of parents, but it has nevertheless been

remarkable what a very large proportion of mothers have been quite emphatic on the point that there were no reactions. It will be noticed that records of reactions of all sorts total 14.5 per cent. and that approximately 7 per cent. were mild, 5 per cent. moderate, and 3 per cent. severe. It will also be noted that the tendency to



Notifications in Cork City before and during immunisation with different agents

TABLE V

Relation of Moloney Tests to Reactions

Age group	Cases	Tests	Cases with reaction and proportion of Moloney negatives (N ve)						Test failed
			Mild	M ve	Moderate	M ve	Severe	M ve	
0-5	24	75	19	6	18	6	11	3	14 (18%)
6-10	66	62	1	10	8	8	9	0	27 (43%)
10 and over	10	10	1	1	—	—	2	2	3 (30%)
Total	200	147	21	17	26	13	22	14	44 (30%)

TABLE IV
Analysis of Reactions

Age-group	Cases	Type of reactions					Total	Per cent
		Mild	Per cent.	Moderate	Per cent.	Severe		
0-5	140	20	14	0	0	4	28	6.3
6-10	889	50	5.6	33	3.7	12	133	11.3
10 and over	516	42	8.1	30	5.8	1	73	17.0
0-5	24	10	41	18	75	14	62	25
6-10	66	12	18.1	8	12.1	0	20	30
10 and over	10	1	10	—	—	2	3	30
Total	150	69	101	46	6	28	313	14.3

Bellic test specific inquiries were made on these two points and where positive histories were forthcoming further more careful questions were put about the nature and extent of the reactions and from the information thus gained Table IV was

developed reactions were more marked in the older groups in spite of the selection of cases through the Moloney test. These results are a distinct improvement on those obtained in the earlier investigation (Saunders 1933) in which it was shown that reactions were experienced in as high proportions as 70 per cent. and 60 per cent. with different batches. In 5 cases in all of which the reaction was classified as 'severe' late development was noted. That is the first signs of inflammation were not noted until 6 or 7 days after the injection. Swelling was a characteristic feature of the inflammation in these cases. In 5 cases swelling without inflammation was noted. In these there was uniform swelling of the subcutaneous tissues of the outer aspect

of the upper arm but no sign of inflammation what ever. The swelling in such cases subsided in the course of a week. In none of 313 cases reported as having had reactions was there anything which gave rise to the slightest anxiety.

We did not find the Moloney test entirely helpful in picking out children who would not be likely to develop reactions with the prophylactic. As stated above all children over 7 were submitted to it and 670 such received the test. Of this number there were 286 Schick positives who yielded 153 Moloney negatives and these were treated with A P T. The results as regards reactions are shown in Table V. In 28 per cent reactions of varying degrees occurred.

ABSCESSSES

In this series there has been a remarkable freedom from abscess formation. Of the 2791 children who received injections of A P T only one case came under our notice.

This was a child, aged 5, who was brought by her mother three weeks after inoculation and then presented an abscess over the site of injection. Arrangements were made for treatment on the following day but it appears that the abscess "broke" itself that evening and the mother did not bother to take the child to hospital. The arm then healed spontaneously and when seen recently the child was perfectly well.

Apart from this case there has been a complete freedom from abscess formation. This is important as it seems to indicate that the makers have been largely successful in their efforts to produce an A P T which would be free from this unpleasant side effect. In our earlier series there were 4 abscesses among 579 cases (0.7 per cent). The results of other authorities are as follows—

	Cases	Abscesses	Per cent
Kositza (1935)	2013	19	0.9
Lai (1935)	489	1	0.2
Murphy (1935)	363	3	0.8
Naughten (1935)	370	1	0.3
Shafton (1936)	101	25	25

Faragó experienced 0.01 to 0.3 per cent in his series and Baker and Gill refer to light abscesses in about 0.04 per cent of a series of over 16,000 inoculations. Shafton's remarkable proportion is altogether exceptional and may be due to the presence of irritating non specific material in his toxoid.

INDURATION

It may be said that every case treated with A P T develops induration in some form. Every case examined by us within five weeks presented it. Varying degrees of size and hardness were experienced. In the great majority of cases the condition presented itself as a hard rounded mass, about 0.5 to 1 cm in diameter, lying in the subcutaneous tissues and freely movable. In some instances the form assumed was that of a small plaque varying in size from that of a shilling to sixpence. These indurations were not so permanent as those experienced in our earlier series and had disappeared in the majority of the cases seen after twelve weeks. In this respect, also, the antigen has been an improvement on the earlier batches.

Summary

1 A report is given of 2791 children treated with a single dose (1 c cm) of A P T.

2 Of this number 2157 were Schick tested at varying periods after treatment and 98.7 per cent yielded negative reactions.

3 Of 849 children who were tested in five weeks 94.4 per cent were negative.

4 Of 443 children tested at six weeks 99.3 per cent gave negative reactions.

5 At periods over six weeks in all cases the proportions of negative reactions were over 99 per cent.

6 A probable conversion rate of 98.6 per cent is assumed.

7 The proportion of cases who developed reactions was small (14.5 per cent of the total cases examined after treatment). Of these only 2.8 per cent were classed as severe.

8 In only 1 case was there any question of abscess formation.

9 Simultaneous with the administration of A P T there was a pronounced and apparently permanent decline in the incidence of diphtheria. It is believed that A P T played a significant part in this decline.

10 An alteration in the Schick status of the community has been noted and allusion made to the possibility of a high natural immunity rate playing some part in the good results obtained.

11 It is proposed to submit the cases to a further Schick test after a lapse of three years with a view to determining the permanency of the Schick negative state as induced by A P T.

REFERENCES

- Ann. Rep. of M.O.H. Cork City, 1935 p. 21.
 Baker J. N. and Gill D. G. (1934) *Amer. J. publ. Hlth.*, **24**, 22.
 Bonsfield G. (1936) *Med. Offr.*, **57**, 15.
Brit. med. J. 1935, **2**, 908.
 Faragó, F. (1935a) *Z. Immunforsch.* **86**, 191.
 — (1935b) *Amer. J. Hyg.* **22**, 495.
 Frazer D. T. and Halpern, K. O. (1935) *Canad. publ. Hlth. J.* **26**, 469.
 Glenny A. T. (1930) *Brit. med. J.* **2**, 244.
 — and Barr M. (1931) *J. Path. Bact.* **34**, 131.
 Haine, J. E. (1935) *Brit. med. J.* **2**, 896.
 Isabellinski M., Judentisch W., and Lewzow, I. (1935) *Z. Immunforsch.* **85**, 218.
 Johan, B. (1937) 2nd Internat. Congr. Microbiol. Rep. of Proceedings, London p. 481.
 Keller, A. E. and Leathers W. S. (1934) *J. Amer. med. Ass.* **103**, 478.
 Kositza L. (1935) *J. Pediat.* **7**, 662.
 Lai D. G. (1935) *Chin. med. J.* **49**, 340.
 Leach C. N. (1935) *Ibid.*, p. 771.
 McGinnes, G. F., and Stebbins E. L. (1934) *Amer. J. publ. Hlth.*, **24**, 1141.
 Murphy W. A. (1935) *Med. Offr.* **53**, 177.
 Naughten M. White, J. H. and Foley A. (1935) *Brit. med. J.* **2**, 898.
 Pansing, H. H., and Shaffer E. R. (1936) *Amer. J. publ. Hlth.* **26**, 786.
 Parlish H. J. (1936) *Brit. med. J.* **1**, 209.
 Saunders J. C. (1932) *Lancet* **2**, 1047.
 — (1933) *Ibid.* **1**, 791.
 Schmidt Burbach, A. (1936) *Zbl. Bakt.* **137**, 122.
 Shafton A. L. (1936) *J. Pediat.* **8**, 676.
 Underwood E. A. (1935) *Lancet* **1**, 137.
 Walker A. A. (1931) *J. Amer. med. Ass.* **103**, 227.

MEDICINE AND THE LAW

Death after Ambulance Journey

THE St. Pancras coroner investigated last week a case where a patient, unable to obtain treatment at the hospital to which she was originally sent, died after a 25 mile journey to a second hospital. The deceased, a married woman aged 32, living at Slough, was taken to the King Edward VII Hospital at Windsor, she was due to have a child in about six days. She proved to have a septic infection, and at the inquest a medical witness explained that the hospital regulations do not permit cases of this nature to be returned in the

building there being no isolation accommodation. There was, he said, an isolation hospital for fever diseases at Slough but it was understood not to welcome cases of puerperal sepsis. The medical officer for Berkshire had an arrangement with the North Western Hospital in London whereby the latter would receive such cases from the Windsor hospital. The patient was therefore removed to the North Western Hospital but died within 24 hours of her admission. There was some difference of opinion among the medical witnesses over the patient's condition at the time of the journey. The doctor who examined her at Windsor on that day said she was not then suffering from general peritonitis; if she had been he would not have sent her away in spite of the hospital regulations. The pathologist who described the results of the post-mortem examination was of opinion that the infection was present for about four days before death. Asked by the coroner if the removal was desirable or not, he described it as deplorable. The coroner thought this adjective not too strong. He recorded a verdict that the patient died as a result of general peritonitis and that death was due to natural causes. This he said was not to imply that he felt satisfied with the removal. This unfortunate occurrence will doubtless lead to a review of the accommodation and arrangements in such emergencies.

Asleep at the Wheel

The Divisional Court has lately allowed an appeal against a stipendiary magistrate's decision that a motorist who had suddenly fallen asleep at the wheel of his car was not guilty of careless driving under Section 12 of the Road Traffic Act. The motorist was tired and as can easily happen dozed off. His car swerved and struck two trees by the side of the road. The magistrate took the view that the driver who is overtaken by sleep is in the same position as a person suddenly taken ill and is therefore not responsible for the results. It may be true as a general proposition of criminal law that an act unconsciously committed is not an offence—for instance if one can imagine a sleepwalker rising from bed and taking his car out on to the highway. The Divisional Court however lent no countenance to the view that a motorist who falls asleep at the wheel cannot be convicted of careless driving. The statutory offence under Section 12 is driving a motor vehicle without due care and attention or without reasonable consideration for other persons using the road. A motorist has a duty to keep awake and not to drive when so tired that there is a risk of his falling asleep.

Manslaughter and Negligence

The broader aspects of homicide by dangerous driving were considered by the House of Lords on April 22nd (Andrews v Director of Public Prosecutions) upon a special appeal by certificate of the Attorney General, from the Court of Criminal Appeal. The judgment delivered by Lord Atkin analysed the nature of manslaughter and made considerable reference to cases where doctors are accused of professional negligence. Andrews had killed a man on a well-lighted road when overtaking another car. He carried the injured man for a short distance on the bonnet of his vehicle then ran over him and failed to stop or to report the accident. The offence of murder contains though not exclusively the element of intention to kill. The offence of manslaughter on the other hand is based mainly on the

absence of intention to kill but the presence of an elusive element of unlawfulness. Where man slaughter is an unintentional killing caused by negligence, what degree of carelessness must be proved? Lord Atkin tracing the development of the law from the earliest times observed that at first there are judicial opinions which suggest that death due to any lack of care will constitute man slaughter. As manners softened and the law became more humane a narrower criterion appeared. People shrank from attaching the penalty for a felony (formerly a capital offence) to results produced by mere inadvertence. The narrower view continued. Lord Atkin became apparent in prosecutions of medical men or men who professed medical or surgical skill, for manslaughter by reason of negligence. He referred in passing to *R v Williamson* (1807) where a man who acted as a man midwife tore away a part of the prolapsed uterus mistaking it for the placenta. By a mistake in his observation of the actual symptoms the accused inflicted on the patient terrible injuries from which she died. Yet Lord Ellenborough held that to substantiate the charge of manslaughter the prisoner must have been guilty of criminal misconduct arising either from the grossest negligence or the most criminal inattention. It was on this occasion that Lord Ellenborough made an oft-quoted observation:

if the jury should find the accused guilty of man slaughter it would tend to encompass a most important and anxious profession with such dangers as to deter reflecting men from entering into it. Lord Atkin then passed to the modern case of *R v Bateman*. He cited Lord Hewart's dicta as to the distinction between negligence in a civil case and negligence in a criminal case. Lord Hewart had said that in order to establish criminal liability the facts must be such that in the opinion of the jury the negligence of the accused went beyond a mere matter of compensation between subjects and showed such disregard for the life and safety of others as to amount to a crime against the State and conduct deserving punishment. Lord Atkin was inclined to think that the ideas of crime and punishment do not in themselves help a jury to decide whether in a particular case the degree of negligence amounts to a crime and deserves punishment. But he observed that the substance of Lord Hewart's judgment in *R v Bateman* was most valuable and he thought correct. In practice it had been adopted by judges in charging juries in all cases of manslaughter by negligence whether in driving vehicles or otherwise.

The upshot of Lord Atkin's judgment is that recklessness can contain the element of negligence which justifies a charge of manslaughter; recklessness is a specific element in the offence of dangerous driving under Section 11 of the Road Traffic Act of 1930. Parliament has since enacted that on an indictment for manslaughter a man may be convicted of the lesser offence of dangerous driving; recklessness as an element of dangerous driving within Section 11 may amount but by no means necessarily amounts to the degree of criminal negligence requisite to establish the offence of manslaughter. The medical profession is only in lively concern in the penalties for careless or dangerous driving or in the subtleties of the history of manslaughter. It will however appreciate that Lord Atkin in the House of Lords has confirmed the decision of the Court of Criminal Appeal in *R v Bateman* so that there has been no relaxation of the high degree of negligence requisite to justify a verdict of manslaughter.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month, his name can be seen later in the half-yearly index

FROM A MEDICAL ECONOMIST

I

SOME years ago the late Sir Walter Fletcher told me that he had always wondered why it was so impossible for a doctor to discuss medical matters satisfactorily with a layman—"even a very intelligent layman." He expressed the view that the difficulty lay in outlook as well as in knowledge and training. In fact the layman's attitude to medicine is always strictly utilitarian. He looks upon his doctor as a man with a mission to cure disease and is apt to become impatient when other considerations are presented to him. Nor is he tolerant, as a rule, of a practice which excludes personality or individual predilection from its scope. He insists upon being cured as a separate and distinct human being and rejects vigorously the idea that any average therapy can satisfy his needs.

His choice of a doctor is determined by this attitude. He will assure you that he is fortunate in the respect that his medical adviser knows his constitution and has had experience of his family—knowledge and experience to which he attaches quite as much importance as to any professional attainment. Again, he will avoid, if possible, a doctor possessed of a reputation for giving the same drugs to all his patients or advising many of his patients to submit to the same surgical or specialist treatments. His doctor must not prejudice him. Obstetarily he refuses to become a mere number in a ledger or upon a bed.

I have heard this attitude described as vanity but, if so, then all men and all women are vain. A more interesting consideration is its merit. Is there, in fact, any substance in the contention of John Smith that he must be treated and cured as John Smith and not as an example of the average man? Again, is John Smith entitled to his view that his doctor must be, if not his friend, at least his father-confessor and familiar? We all repeat the assertion that the best treatment is to be obtained in great hospitals, but those of us who can afford to do so, go, often enough, to private nursing homes or private wards. Nor do we choose, necessarily, the most distinguished, academically, among our colleagues to see us through our illnesses. We are certainly not, in this action, casting any aspersions either upon hospitals or upon learned professors. Rather we are obeying an instinct which, in others, we are apt to deprecate as irrational.

What is that instinct? The Duke of Wellington stated on one occasion that the presence of Napoleon on a battlefield was equivalent to a French reinforcement of 50,000 men. The reference was not so much to the Emperor's genius as a commander as to the effect of his personality upon his soldiers. Each man became, in his presence, a being transformed. Napoleon was well aware of it, nor was he less well aware of the importance, in war, of those influences which he knew so well how to exert—patriotism, the will to conquer, the sense of a crusade, the thirst for glory. These "*imponderabilia*," as he called them, represented in his view the most important element of victory. His proclamations to his soldiers remain as the eloquent witness of his faith. Foch held the same opinion. His dispatch,

during the Battle of the Marne, remains a classic of leadership. "My centre is broken, my right recoils. All goes well. I attack."

What has this to do with the choice of a doctor? Everything. I remember still, after nearly half a century, the sense of ineffable relief and comfort which I experienced at the sight of our family doctor when any member of the family was ill. He was a very small man with an uncompromisingly bald head. But there was a look in his eyes which was worth the contents of a dozen chemists' shops.

* * *

Not that he failed to prescribe medicines. I have often observed that those men who, in any walk of life, are able to inspire confidence are almost always masters of the technique of their calling. Both Napoleon and Foch were superlatively good soldiers in the strictest professional sense, neither, had he been a doctor, would have missed a ruptured appendix or failed to make a diagnosis of diphtheria, and neither would have delayed to order the appropriate treatment. But technique, in the view of both, cannot be complete if the man himself is left out. Confidence and inspiration they insisted are the mountain peaks of technical efficiency. They would have so achieved, consequently, that their patients placed in them implicit and comfortable trust.

It seems to stand to reason that an influence which makes a man stronger and more confident than he was before he had experience of it must, similarly, exert effect upon every organ and every cell of every organ. Few dispute to day that healing, in the last issue, is by that *vis medicatrix naturæ* upon which the doctors of earlier days placed so much reliance. The greatest doctor perhaps is he who can most magnify, in his patient's body, the healing power of nature.

All this is commonplace, of course, but there is much forgetfulness of the commonplace. The assertion that, other things being equal, the doctor with the biggest practice must necessarily be the best doctor would scarcely go unchallenged among doctors themselves. But most laymen would accept it as obvious truth. And, in fact, Napoleon—to return to him—put it forward as a rational basis for any system of remuneration of doctors by the State. He was hotly controverted by his medical advisers but refused to change his mind. Indeed he pointed to Corvisart, his personal physician, as proof of his contention, saying that Corvisart was popular because he could cure persons whom other doctors had failed to cure. Corvisart's medical memoirs are ordinary enough and do not suggest that he was possessed of any special knowledge.

Medical achievement has been so great recently in the field of physical science that the science of men has tended to be overlooked or even despised as unworthy. So much so, indeed, that, as a clinical teacher declared some years ago, "they are all engaged in studying the molecular structure of steel in order to find out what a bicycle looks like." That may perhaps be another way of saying that any divorce of medical research from the bedside is fraught with danger. For, in truth, there is no such thing as disease, there are only sick men and women.

And it is the sick men and women who must be treated.

It was suggested recently that the human organism spends all its energies in reacting to stimuli every one of which in the absence of reaction would be lethal to it. On that showing and there is a substantial body of supporting evidence, the phenomena of disease are signs not as is often asserted of reaction but of failure to react completely. The sick man is like the man in panic: he cannot bring himself to face and overcome his trouble. That it may be is where the doctor really comes in. His strength and wisdom and skill are added to those of his patient so that the impossible may be accomplished. The doctor must necessarily fail where his knowledge fails, and in this truth lies the abundant justification of all research. But the fact remains that knowledge being equal one man succeeds where another can envisage nothing but calamity.

And thus certainly is great mystery. I think sometimes that our lively fear of falling into the abyss of the magical has blinded our eyes to the reality of the mysterious. Desperately we seek to explain in terms of cells what belongs only to organs and in terms of organs that which belongs to the body as a whole. Worse still we must force life into the measure of the dead house lest we confess to commerce with spirit. The endocrine complex is all very well but it does not explain the influence of man upon man or more mysterious still of man upon himself through faith. Science it would seem is no more free from the temptation to play Smart Alec than is any other branch of human activity.

It must resist that temptation and the best tonic of resistance is without doubt that sense of the mysterious which so conspicuously informed the minds of for example Pasteur and Lister. As was said by the Rusticating Pathologist in these columns to hand on the present system of knowledge as if it were a system of revealed truth is a travesty of education of university standard.

The doctor indeed ought to go to school with the priest and the soldier both of whom have much to teach him. Lord Baden Powell told me years ago that his secret is the enlisting of a boy's native enthusiasm. Once that has been set to work so to speak a real physical culture—as opposed to physical jerks—becomes possible. For enthusiasm compels the lad to submit to the hard discipline of training which enthusiasm has recognised as the prerequisite of efficiency. It is the same in the arts and crafts. All these impose the fierce discipline of the raw materials the morality of things as opposed to the morality of ideas. None lacking enthusiasm will endure so stern a schooling. The doctor's raw material is humanity not an incoherent mass but a body of persons each sharply differentiated from all the others. The discipline imposed by them is stern so that nothing but the love of them can make it endurable. You may call this vocation or enthusiasm of its reality and its necessity you cannot beyond a very early age remain in doubt. What the patient asks for above skill and knowledge is sympathy dedication sacrifice in the classic meaning of that word. Nor will a wise man rest until he has found it for therein is the only true healing.

PANEL AND CONTRACT PRACTICE

The Capitation Fee

LAST year the Panel Conference asked the Insurance Acts Committee to open negotiations with the Ministry of Health for reconsideration of the capitation fee of 9s. awarded by a court of inquiry in 1924. A deputation waited on the Minister and pointed out that the amount of work that insurance practitioners are called upon to do has substantially increased during the past twelve years. The Minister said he thought that a flat rate below the present figure could well be justified, but since there was a difference of opinion he was willing to arrange for arbitration. A similar difference of opinion it will be recalled arose over the capitation fee to be paid for persons under sixteen years of age when these are brought under the National Health Insurance scheme and the council of the British Medical Association report (*Brit. med. J.* April 24th 1937 Suppl. p. 218) that they have had no further communication from the Ministry about this. They understand however that the arbitrators to be appointed will be asked to say what in their opinion should be the appropriate fee for medical attendance on all sections of the population.

Negligence and the Sequel

The London Medical Service Subcommittee has not had to meet between December and April which we understand is a record vacation but they have had now to consider three cases, one in which no evidence of failure on the part of the practitioner was adduced, one in which an insurance practitioner was led to issue two certificates without examining the

patient who was actually in hospital (this was one of those cases of importunity by a financially embarrassed wife and will probably cost the unfortunate doctor £2) while the third has been the subject of considerable attention by the lay press.

On Dec. 30th 1936 an insured person became ill and took his temperature which was 103° F. He lived in a flat in a block of such dwellings and his sister in law who was looking after him while his wife was in hospital telephoned for the practitioner at about midnight. She spoke to the caretaker of the house in which the practitioner lives and being told that the practitioner was out she again telephoned about 1 A.M. with a like result. She told the subcommittee that on each occasion she gave the name of the patient his address and the exact location of the flat close to a well known hotel in the city, also that the patient seemed to be seriously ill. According to the practitioner he returned home between 1 and 2 A.M. and found a note that he was wanted at X House to which he proceeded finding the house in darkness and obtaining no reply to his rings at the bell. He said he went again about 8.30 A.M. and was then told by the managers that no request for his services had been made from that address. He telephoned home but was assured that the managers indicated that he was wanted at X House. In point of fact the insured person resided at X House. The subcommittee's report says that admittedly the names of the two establishments are not dissimilar and might be confused over the telephone but they lie some distance apart and they had no hesitation in accepting the statement of the relative that she was at pains when telephoning

to explain the exact location of the house, and that the directions were repeated to her. The practitioner did not attend his morning surgery at all on Dec 31st but said he was visiting patients until 6 P.M. Further telephonic applications for his services were made at 8.45 A.M. and at two or three other times during the morning, but although the caretaker asked another practitioner to visit the patient he was unable to do so. Eventually the practitioner saw the patient at about 8.15 P.M., but by then another doctor had been called and had ordered the patient's removal to hospital, where he died some eight hours later.

The practitioner told the medical service subcommittee that it was the practice of his caretaker to note the addresses from which the requests for visits came, but not the names of the patients concerned. The comment of the medical service subcommittee on these statements was as follows: "The practitioner's explanation that he was unable after two fruitless calls at 'X House' to refer to the record card for the true address because the caretaker was not in the habit of recording names, or, as it appeared from the practitioner's answers to us, even the number of the tenement, in a block of tenements, seems to us, if it is true, to point to a lack of method in carrying on his practice, which would be nothing less than appalling. His failure to offer this explanation when he did visit 'Y House' (where incidentally he enquired for the patient by name) is a strong indication that the explanation is not worthy of credence. We say this with much regret, but we should frankly still more regret the condition of things in this practice if the explanation were true." The committee decided to censure the practitioner, to require him to assume responsibility for the expense incurred in calling in another doctor, and to ask the Minister of Health to withhold the sum of £20 with a view to the deduction of a corresponding amount from the remuneration of the practitioner (who has, however, the right to appeal to the Minister). The committee have also decided to consider action under regulation 35 (2) (a). This regulation provides that if the committee are satisfied that owing to the number of persons included in his list a practitioner is unable to give adequate treatment to all of them, they may, after consultation with the panel committee, impose a special limit on the number of insured persons for whom the practitioner may undertake to provide treatment. In that event any number in excess of that limit shall be dealt with as though the list of the practitioner was by that number in excess of the general limit fixed for the list of practitioners in the area. The insurance committee decided to refer this case to the appropriate subcommittee to consider whether the normal maximum of 2600 insured persons should be reduced. Clearly consultation with the panel committee will take a little time and a question arises as to possible appeal. This particular practitioner has a list which is approaching the maximum and if a lower limit is fixed for him, it will of course mean that his insurance remuneration will be reduced. If, for instance, the committee decide that a limit of, say, 2200 should be applied to this practitioner, it will mean that his potential yearly insurance income will be reduced by about £135. The practitioner might feel that it was undesirable to appeal against the withholding of £20 in respect of the negligence found in the specific case but the prospect of losing part of his annual income might well lead him to appeal to the Minister. If, in fact, the committee after consultation with the panel committee, decides on a lower limit, as part of the decision in the case, the period of one month

during which the practitioner may appeal will doubtless be regarded as beginning when notification of the decision for or against a lower limit is sent to him.

IRELAND

(FROM OUR OWN CORRESPONDENT)

A NATIONAL SERUM INSTITUTE

Dr C. J. McSweeney has been speaking to the Royal Academy of Medicine on the need for a National Serum Institute in Ireland. At present, he said, there are no manufactures of serums for diagnostic or therapeutic purposes in Ireland, and in the present state of Europe this position is not free from danger, for national emergencies elsewhere might lead to a shortage of supplies. Apart from this, serums prepared from strains of micro organisms prevalent in other countries cannot be expected to be as potent in Ireland as serums from the native strains. The fatality rates for such diseases as diphtheria and cerebro spinal fever are consistently higher in Dublin than in cities in Great Britain, even when similar treatment and dosage were employed. Dr McSweeney suggested that this difference of results may be due to a lesser efficacy of the serums made from strange strains. An institute such as he suggested would serve as a centre for investigation and research into problems relating to serum therapy and prophylaxis. If it were to be established it could most fitly be associated with the new Dublin Fever Hospital scheme, and, in such circumstances it could undertake the task of preparing an adequate supply of human immune serums for the prophylaxis and treatment of such virus diseases as measles and poliomyelitis. Convalescent donors would be numerous enough to permit the issue of serums so prepared to private practitioners. The institute, if established, should be in close association with the recently established Medical Research Council and with the medical schools of the country. It should not be given a monopoly in the manufacture of serums for the Irish Free State, nor should it have power to interfere with the business of the many reputable firms which market their biological products there. He thought it would be possible to find the necessary finances from Hospital Sweepstakes funds.

Prof J. W. Bigger, the next speaker, emphasised the importance of such an institute from the points of view of education and research. While approving of the establishment of a serum institute, he would oppose its being under State control. State activity was seldom progressive and State control tended toward parsimony even where expenditure might be necessary. An institute would be expensive for the services it could hope to render. In the discussion which followed there was general agreement that the establishment of a serum institute deserved consideration and investigation, and it was agreed to invite the General Council of the Royal Academy of Medicine to take appropriate steps. There was a consensus of opinion that if established the institute should be free of Government control, and that one of its main objects should be the promotion of research.

CHARING CROSS HOSPITAL.—Mr Philip Inman, speaking at the annual general meeting of the court of governors of this hospital, said that it was hoped to rebuild in or near the present site. The income for 1936 was a record one, £85,729. The expenditure was £71,143.

PUBLIC HEALTH

THE INFLUENZA EPIDEMIC IN
RETROSPECT

As judged by the number of deaths attributed to influenza in the 122 Great Towns of England and Wales the epidemic period of 1930-37 may be said to have been roughly from the beginning of December 1930 to the end of March 1937. The secular trend of the epidemic as judged by mortality in these towns (the only general numerical data we possess) is shown in the Table and diagrams below. In the

Deaths from Influenza in the Great Towns

Week ending 1935	Deaths	Week ending 1936	Deaths	Week ending 1937	Deaths
Dec 3rd	32	Dec 4th	45	Dec 5th	43
10th	68	14th	62	12th	64
17th	85	21st	67	19th	67
24th	120	28th	60	26th	97
31st	303				
1933		1936		1937	
Jan 7th	680	Jan 4th	110	Jan 2nd	325
14th	1030	11th	110	9th	768
21st	1684	18th	89	16th	1100
28th	1033	25th	104	23rd	1137
Feb 4th	1919	1st	98	30th	1155
11th	1200	8th	85	6th	976
18th	650	15th	91	13th	697
25th	314	22nd	119	20th	423
Mar 4th	212	29th	107	27th	312
11th	157	7th	114	Mar 6th	161
18th	110	14th	84	13th	141
25th	65	21st	80	20th	171
Total	10 621		1185		7570

seventeen weeks between the beginning of December 1930 and the end of March 1937 the number of deaths registered as due to influenza reached the total of 7570. This number may be compared with the 1465 in the same period of 1935-36, a normal non-epidemic year and the 10 621 in 1932-33 the last epidemic year.

Although on a lower scale than this last wide out

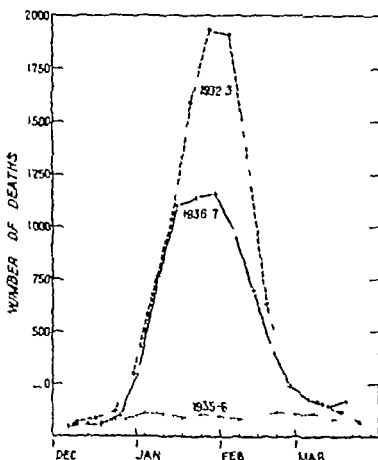


FIG 1.—Graph showing weekly total death from influenza in the Great Towns in three different years.

break, the recent epidemic as judged both by mortality and by the available evidence of widespread incidence, must undoubtedly be added to the list of major visitations to which the country has been subject since the beginning of the century. In its

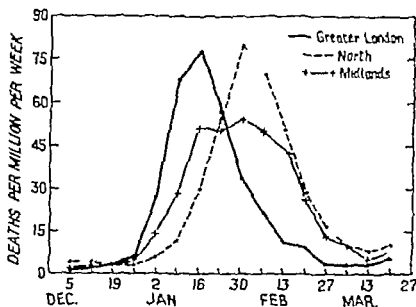


FIG 2.—Weekly deaths from influenza in the Great Towns per million of estimated population.

time of onset and of maximum mortality it closely resembled the epidemic of 1932-33 but its rate of decline has been relatively slower. The age distribution of mortality was of the type usually described as normal that is the greater share was borne by persons well on in years and relatively little by young adults. With the exception of the Welsh towns which appear to have escaped rather lightly there is little evidence from the mortality figures of the epidemic bearing more heavily on one part of the country than another. The death rates from influenza between December and March vary but little between the different regional areas. There was however some considerable difference in the time sequence of the epidemic trend. In London both the central area and the environs the maximum mortality fell in the week ending Jan 10th and in the remaining towns of the south-east the peak came only a week later. In the northern midland and south western towns it was not reached till the last week of the month and in the eastern and Welsh towns the total continued to rise till the end of the first week of February. In general the figures show the epidemic progressing from the south to the north and radiating at the same time to the east and west.

The Health Reports of the League of Nations show that in Germany the epidemic occurred some weeks earlier between the middle of November and the third week of December. Its incidence was falling there at the same time as it rose in the southern area of England. In the U.S.A. its course appears to have been broadly parallel with that in this country. Many other European countries show evidence of epidemic prevalence and in the majority of them the peak had been reached before the end of January. There is little else to add. The work now in progress at the National Institute for Medical Research and elsewhere gives us much hope of the final production of an efficient vaccine such as might tide the population over these few weeks of sudden and universal epidemicity. Such protection might well reduce the ravages of outbreaks which we now seem destined to endure every few years.

CORRESPONDENCE

AMBULANCES AND STRETCHERS

To the Editor of THE LANCET

SIR,—In his letter on this subject in your last issue Surgeon Commander Ford advocates a standardisation which is obviously overdue. He suggests that as the majority of stretchers are of the long type it is desirable "to encourage the production of long ambulances only."

The long ambulance may be all very well for public authorities but there are large numbers of firms using ambulances for industrial accidents and the long ambulance is inconvenient and more costly. Surely it would be much better to standardise the stretchers with telescopic handles. After a few years of this standardisation the vast majority of stretchers could easily have been converted to the telescopic or short handled type.

Surgeon Commander Ford has omitted to mention the other important factors in standardisation—namely, the wheel base, wheel diameter, and gauge of the stretcher wheels to enable them to run on a standardised track on the ambulance racks. In addition it is very necessary that hospital casualty trolleys should be similarly standardised. A very little investigation will show how standardisation of one particular is quite useless unless all the factors in stretcher construction are worked to a common specification. I urged this in a letter to your columns two years ago (*Lancet*, 1935, 1, 574). At the moment however stretcher manufacturers and ambulance makers are continuing to act with a sweet individuality which may make it necessary to shift a seriously injured patient as many as three times between the location of the injury and his arrival in the ward. This is entirely unnecessary and quite absurd.

In advocating the retention of the long type stretcher has Surgeon Commander Ford considered that passenger lifts and railway carriages will not permit the long handled type, whereas the telescopic-handled type of stretcher can be fitted in almost anywhere? To my mind there is no possible alternative but that the long handled type of stretcher should be abolished.

I am, Sir, yours faithfully,

Beeston Notts April 23rd

L P LOCKHART

ERADICATION OF BED-BUGS

To the Editor of THE LANCET

SIR,—The article by Mr. Ashmore and Mr. McKenny Hughes in your issue of Feb. 27th, on the use of coal tar naphtha distillates in bed bug control, draws attention once more to a serious problem. In spite of improved standards of living *Cimex lectularius* is still spreading, mainly through the introduction of infested furniture into new premises.

An agent employed against bed bugs should if possible be (1) cheap, (2) toxic to the insect, (3) not toxic to man and animals, (4) non inflammable, (5) easy to apply, (6) readily available, and (7) free from residual odour and not injurious to the premises disinfested. Further (8) its use should not involve much preliminary preparation. How far do coal tar naphtha distillates fulfil these conditions?

1 *Cost*—Their present cost is only about 2s 6d per gallon.

2 *Toxicity to insects*—Since the naphtha fraction forms a toxic vapour the liquid apparently need not

come into actual contact with the insects in order to kill, though in the method described it appears to be applied both as a contact insecticide and as a fumigant. Experimenting with a naphtha fraction of the same boiling range, I found that the vapour has a rapid action on bed bugs, but that those receiving a sublethal dose rapidly recover. At the concentration specified (one gallon per 750 cubic feet) in glass containers, an exposure of six hours at 73° F did not produce a 100 per cent kill using third and fourth stage nymphs. After only two hours' exposure all the bugs recovered, and after four hours, 75 per cent. In each case all insects were apparently moribund after removal from the containers. The same concentration was found to be ineffective against the eggs in all stages of incubation, there being a 100 per cent hatch after six hours' exposure under the same conditions. Although the exposure time was only six hours against 18-24 as recommended, the greater resistance of eggs than nymphs to naphtha is shown.

3 *Toxicity to man and animals*—Although the saturated atmosphere has been proved to be relatively non toxic to animals, gas masks must be used during fumigation. The possible occurrence of mesitylene, which has been found to be toxic to man, must be considered. This chemical, having a boiling point of 165° C, would, if occurring in the crude naphtha, be present in the fraction mentioned (distillation range 180°-190° C approximately) after distillation. Local government officials and others might be led to imagine that any coal tar naphtha fraction coming within the distillation range specified would therefore be satisfactory. Gas works and other sources of supply, while endeavouring to keep down the cost of the product, might fail to remove mesitylene from the fraction.

4 and 5 *Inflammability and ease of application*—The fraction specified was stated to have a flash point of not less than 105° F. When applied by means of a sprayer, the flash point of the fraction would be even lower in the atomised state. The fire hazard is, therefore, great, and it is doubtful, even with premises carefully sealed after fumigation, if it would be safe to have a naked light outside the room. There might also be a danger of explosion due to static electricity, when the fraction was applied by means of a pressure sprayer. Spontaneous combustion of petrol vapour has been found to be caused by static electricity, the risks being greatest under conditions of low relative humidity. Such an explosion might do much damage, and the attitude of fire insurance companies must be considered.

The volatility of naphtha decreases rapidly with decrease in temperature, but the resistance of the bugs increases with decrease in temperature. It is emphasised that fumigation should not be attempted at temperatures below 60° F, and pre heating of the premises by means of stoves should always be adopted, except in hot weather when the room temperature is above 70° F. This is a serious drawback, especially as the temperature cannot be maintained after the room is sealed, because the stoves must be removed owing to the risk of fire. The utmost caution must be observed when applying naphtha, and the employment of well trained men is desirable. The vapour is heavier than air, and tends to settle in the room whereas the bugs are often located in ceiling cracks. Thus measures must be taken to ensure distribution and concentrations far above those actually needed to kill bugs in sealed containers are necessary. In fact, the amount mentioned by Ashmore and McKenny Hughes is ten times the lethal dose, although the conditions were not stated.

6 *Availability*—There would be no difficulty in obtaining large supplies of naphtha from gas works and other places, but as I have said already, it is well to know the nature and percentage of toxic constituents in the fraction.

7 *Odour*—Naphtha has a very penetrating odour. This is an objection for it is undesirable for the sufferer to have to broadcast the fact that his premises are infested, and some vapour must escape before the rooms are sealed.

8 *Preparation of premises*—As with HCN fumigation removal of tenants and subsequent ventilation are required.

Though naphtha is not so poisonous as cyanide and the vapour is stated to clear after a few minutes, the premises must be thoroughly aired.

With vacant houses the difficulty of finding temporary accommodation does not arise but the attitude of tenants faced with temporary removal while their rooms and furniture are disinfested often prejudices local government officials against fumigants. Apparently with naphtha it is not thought necessary to remove all furniture, curtains &c. since the vapour is said to penetrate at least as far as the bed bugs secrete themselves. This is somewhat surprising because even when HCN is used the furnishings are normally removed for van fumigation, or steam disinfection in special chambers.

It will therefore be appreciated that in the practical application of an insecticide whether against bed bugs, cockroaches or other insects the toxicity to the insect is only one of many points to be considered. HCN is known to be very toxic to bed bugs (adults, nymphs and eggs) but it is so poisonous that it can be used only by experts. Naphtha however also has limitations that make it far from ideal as an insecticide.

There appears to be a place for an insecticide which the tenant or other user can apply himself. This introduces contact insecticides proper. The past few years have seen the development of certain contact insecticides for use against household pests fulfilling the desiderata stated at the beginning of this letter. They are mainly vegetable extracts which although non-toxic to man and warm-blooded animals, are very toxic to insects. Their toxicity to insects has lately been increased by the addition of certain organic materials harmless to man.

These insecticides must come into actual contact with the insect in order to kill. They are usually in the form of liquids applied by pneumatic sprayers so as to produce a mist of finely divided droplets which under high pressure can be forced to penetrate behind loose wall paper and behind cracks in skirting boards. This type of disinfection can be applied at a fraction of the cost labour and time of cyanide fumigation and without danger to the occupier or operator.

When the extracts are dissolved in an odourless kerosene base of high flash point the fire risk is negligible. Too heavy an oil base is however undesirable because there is danger of staining due to its low volatility. Increased freight costs are likely to be incurred on liquids below 150° F. flash point (see Railway Dangerous Goods Regulations) and similar regulations applying to inflammable liquids sent by road have now been introduced. High transport costs are therefore another point to be considered before adopting a new insecticide for use on a large scale.

There is no doubt that with fumigation enormous wastage occurs not only in absorption but in adsorption. Bed bugs are rarely found crawling on the walls in day time unless they are in very large numbers. The great majority are hidden in cracks behind loose wall paper, behind skirtings and in the framework of bedsteads and seams of mattresses and furniture. Fumigation is impartial; the fumigant cannot be concentrated on such hiding places thus there must be wastage. On the other hand when using a contact insecticide in the form of a finely atomised spray from a good pneumatic hand sprayer or preferably an electric sprayer most of the insecticide can be directed on to the walls and into cracks rather than into the actual room space and a smaller volume of liquid suffices. Whatever method is adopted—fumigation or contact insecticide spraying—

the room should be cleared beforehand and the furniture dealt with separately either by steam or cyanide fumigation. The best time to disinfect is after the room is stripped and before redecoration.

I am Sir yours faithfully

J. M. HOLDORN

Jeyes Sanitary Compounds Co. Ltd., Richmond-street F 13

KETOGENIC DIET AMONG ESKIMOS

To the Editor of THE LANCET

SIR,—I have recently returned from East Greenland where I lived for fifteen months as medical officer to L. R. Wager's British East Greenland Expedition 1935-36. We were a party of seven Europeans and fourteen Eskimos (increased by one by the end of the year). During that time I was consulted by an Eskimo woman of about 40 years of age who was suffering from frequency of micturition and scalding pain on passing her urine. I examined her urine and found that she had a *B. coli* infection. She told me that she had had several attacks in the past but that this attack did not seem very amenable to treatment. On asking of what her treatment consisted, I learnt that she had been eating very large quantities of blubber which is the fat of the seal. It appears that this treatment is traditional among the Eskimo colony at Angmassalik although I do not know how frequently the condition occurs.

I should perhaps state that contrary to normal belief the Eskimo does not live on a very high fat diet although he does live on a low carbohydrate diet; he is not continually eating blubber but normally eats about as much fat with his meat as we eat with a grilled chop, that is to say that although the total fat diet per day is higher than that to which we are accustomed the protein fat ratio is about the same as ours.

In view of the modern treatment of cystitis by the ketogenic diet and mandelic acid this traditional treatment of the Eskimo seems to deserve notice.

I am Sir yours faithfully

L. C. POUNTAINE.

Royal Devon and Exeter Hospital, Exeter, April 22nd

SHORT WAVE THERAPY

To the Editor of THE LANCET

SIR,—May I draw the attention of your readers who are interested in short wave therapy to the following quotation from a report recently issued by the American Council of Physical Therapy—a body which should certainly have its counterpart in this country.

Much of the work of this Council in the past year has been confined to the consideration of so-called short-wave diathermy machines. In view of the deliberations the Council believed it was justifiable to state based on the present available evidence the following conclusions: (1) There is no specific biologic action of high frequency currents. (2) There is no specific bactericidal action. (3) The therapeutic effect is due to the heat produced. Elaborating these three conclusions the Council felt that the general practitioner should understand that when he buys a short wave diathermy machine he is purchasing an apparatus capable of producing heat. In the light of available evidence it has absolutely no other specific action.

I am Sir yours faithfully

London S.W., April 23rd

H. J. TAYLOR.

PRURITUS ANI

To the Editor of THE LANCET

SIR,—In the paper on pruritus ani which appeared in your issue of April 17th Mr Riddoch says "I hope to show that idiopathic pruritus ani is caused by oedema of the perianal skin, following on stasis in the external hæmorrhoidal veins, in other words, it is due to external piles." He mentions that X rays as a remedial agent appear to have some curative value but does not refer to radium, although the pathological condition described is one in which this agent should prove beneficial to the extent of producing a cure even in persistent cases.

The fact that X rays did not fulfil all the hopes that were entertained for them in this condition does not necessarily preclude the success of radium.

I am, Sir, yours faithfully,

RALPH H BROWNE CARTHEW

London, S W, April 19th

INFECTION THROUGH THE OLFACTORY MUCOSA

To the Editor of THE LANCET

SIR,—The leading article in your issue of April 10th is misleading as regards the passage of pigment granules through the tissues. This follows an assumption by Rake that a mixture of iron ammonium citrate and potassium ferrocyanide solutions constitutes a suspension of Prussian blue, which it does not. Rake's papers (*J exp Med* 1937, 65, 303, *Proc Soc exp Biol* 1936, 34, 716) contain several references to pigment, granules, or particles. For example, "prussian blue particles pass rapidly from the surface of the olfactory mucosa and within two minutes are found in the perineural spaces of the olfactory nerve fibres and in the subarachnoid space." He misinterprets Le Gros Clark in saying that he "considered that the granules had reached the olfactory bulbs mainly by passage along the perineural spaces." Le Gros Clark tried various particulate dyes (trypan blue and Indian ink) but in no case could he demonstrate the passage of particles from the nose to the brain. Both he and Rake used chemical solutions which were precipitated by acid in the tissues only after absorption. Rake uses his supposed passage of particles through the olfactory mucosa to the subarachnoid spaces in support of his studies of the passage of organisms from the nose to the brain, but as he used bacteriological methods only, such need further confirmation.—I am, Sir, yours faithfully,

F. A. PICKWORTH.

Joint Board of Research for Mental Disease
Birmingham April 23rd

PRISONERS AND CAPTIVES

To the Editor of THE LANCET

SIR,—Whilst fully appreciating the kindness and human sympathy shown in the writings of your contributor Taddygaddy, I feel that in your issue of last week he allowed himself to be unnecessarily provocative. Had he paused to reweigh his "Grains and Scruples" I am sure that he would have avoided what can only be taken as severe criticism of a considerable section of his medical colleagues. His "unfettered thoughts" have allowed him to wander into the realms of fantasy. Surely it is unnecessary and unhelpful to attempt to arouse from its grave the voluntary hospitals' claim to monopoly of human feelings which died of inanition many years ago! On behalf of those who have the responsibility of

the care and treatment of the mentally deficient and the mentally ill I wish to register a strong protest against the attempt to build up prejudice against mental hospitals and institutions. I feel sure that your contributor would be persuaded to change his antiquated opinions if he would accept the invitation of any of my fellow medical superintendents or myself to come and move freely among our patients. He would run no risk of remaining "cut off and forgotten"—I am, Sir, yours faithfully,

W GORDON MASEFIELD

Brentwood Mental Hospital, Brentwood,
Essex April 27th

POSTURAL DEFORMITIES OF THE ANTEROPOSTERIOR CURVES OF THE SPINE

To the Editor of THE LANCET

SIR,—Mr Philip Wiles, in your issue of April 17th, touches on the value of certain exercises used in ballet training.

The system on which the ballet dancer is trained is a highly technical arrangement of fundamental exercises leading to the elaborations familiar to all. They are taught always in the same order, the subject holding a fixed bar with one hand, the other being free to move. This training at "la barre" is in accord with Mr Wiles's thesis in that, although to the spectator it appears that the exercise is being done by one leg whilst the subject stands on the other, in reality the work being done on the supporting side of the body is an apt illustration of Mr Wiles's "absence of movement." To maintain the upright position characteristic of the ballet dancer whilst performing extremely taxing movements with one leg requires strong adjustments throughout the whole body. By the perpetual repetition of these adjustments in successive exercises, changes can be effected in posture not possible in my opinion, by other methods in use at present. The technique is powerful, and so has its dangers. For this reason it is probably advisable that its remedial application be confined to medical gymnasts with ballet training, who are therefore able to make necessary modifications according to individual needs.

I think that Mr Wiles is too optimistic in maintaining that it requires but little ingenuity to invent a remedial system once the principles are understood. Systems come and go. To live they must have an inherent creative quality (the ballet technique has survived some 300 years because it has this). Posture exercises must have some primitive and/or aesthetic value—a potential, if not actual, emotional quality.

I am, Sir, yours faithfully,

CELIA SPARGER, C S M M G

London, W April 23rd

THE NEW WESTMINSTER HOSPITAL.—Part of the new Westminster Hospital, now being built on the St John Gardens site in Westminster behind the Abbey, will be known as the Coronation Wing, and by gracious permission the first ward in this will be called the King George the Sixth Ward. The total cost of building the wing will be £30,000. It will contain two wards of eleven beds each, and several rooms ancillary to the service of the wing, including a small pathological laboratory for quick examination. Nearly £20,000 has already been contributed towards the cost of this wing. Among recent contributions are two gifts of £1000 from "Aged 77." Mr Bernard Docker, chairman of the hospital, received the second £1000 from the same generous donor this week. An alderman of Westminster and governor of the hospital has also marked his appreciation of the project with a gift of £1000.

THE SERVICES

ORGANISATION OF THE INDIAN MEDICAL SERVICE

On April 8rd we gave an account of changes in the organisation of the Indian Medical Service. The *London Gazette* for April 20th contains a Royal Warrant amending the current rules for the promotion and precedence of the service. It is provided that the director-general shall hold the substantive rank of major-general or when approved by the Secretary of State for India of lieutenant-general. The ranks of the other officers shall be colonel, lieutenant-colonel, major, captain and lieutenant. A captain with at least six years service a major or a lieutenant-colonel may be promoted to the next higher rank by brevet. Officers will be placed on the retired list when they attain the following ages: major-general 60; colonel and brevet colonel 57; lieutenant-colonel and major 55; but a lieutenant-colonel who entered the Service before May 1st 1811 and who has been specially selected for increased pay may if he attains the age of 55 years before he completes 27 years service for pension be retained until completion of such service. An officer retiring on pension before completing 30 years service will be liable, till he attains the age of 55 to be recalled to duty in case of emergency. Six of the most meritorious officers on the active list will be named honorary physicians to the King and six honorary surgeons. On such appointment officers below the rank of colonel may be promoted to the brevet rank of colonel.

Major-General Ernest William Charles Bradfield O.I.E. O.B.E. M.S. Lond. F.R.C.S. Edin. I.M.S. Hon Surgeon to H.M. The King is now Director-General Indian Medical Service vice Major-General C. A. Sprawson O.I.E. K.H.P. I.M.S. retired.

Lt-Col J. F. James I.M.S. retires.

The Commander in Chief in India has made the following appointments:—

Lt-Col J. J. D. Roche R.A.M.C. as Assistant Director of Hygiene and Pathology Western Command Headquarters.

Major J. H. G. Hunter R.A.M.C. as officiating Surgeon to the Commander in Chief.

Major T. W. Davidson R.A.M.C. as Specialist in Radiology Peshawar District.

ROYAL NAVAL MEDICAL SERVICE

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Lt. Comdr H. M. Willoughby to *Southampton*.
Surg. Lt. M. I. Reddington to *Imbroke* for R.N. Hoep. Chatham.

Surg. Lt. (D) R. S. Daly promoted to Surg. Lt. Comdr (D).

Mr A. K. Kerr of St. Ives, Cornwall has been appointed Admiralty Surgeon and Agent for St. Ives.

ARMY MEDICAL SERVICES

Col. C. M. Drew D.S.O. late R.A.M.C. having attained the age for retirement is placed on retd. pay.

Lt. Col. and Bt. Col. J. A. Mansfield D.S.O. from R.A.M.C. to be Col.

ROYAL ARMY MEDICAL CORPS

Maj. R. R. G. Atkins M.C. to be Lt.-Col.
It is to be Capt. R. J. G. Morrison J. W. Orr & C. London C. I. Watson J. A. G. Carmichael W. G. Paterson A. T. Mearns H. R. Simon A. C. Byles J. A. Hamilton J. Shields C. W. Maisey W. T. M. Moore K. H. Harper T. W. W. D. Avey M. E. Kelleher I. J. Crowe and C. McGrath.

It is (on prob.) R. J. Niven and S. H. Gibbs are restored to the establishment.

ARMY DENTAL CORPS

Short Service Commission F. K. Johnson to be Lt. (on prob.)

ROYAL AIR FORCE

Flight Lt. H. J. Melville is transferred to the Reserve Class D.
Flying Offr. H. C. de B. Milne is promoted to the rank of Flight Lt.

DEATHS IN THE SERVICES

The death occurred on April 24th in London of Major General Sir Thomas Lamb C.B. K.C.M.G. He joined the Army as surgeon in January 1886 became major R.A.M.C. in January 1898 lieutenant-colonel in 1906 colonel in March 1915 and major-general in 1917. He was temporary surgeon-general (without pay and allowances of the rank) while a D.M.S. in August 1916. He served in the European War from 1914 as an A.D.M.S. and D.D.M.S. of the Mediterranean Expeditionary Force. He was mentioned in dispatches and created C.B. (Mil.) in 1915 and K.C.M.G. in 1917. He was Inspector-General of Medical Services at the War Office from 1918 to 1921 (See p. 1080 for the Obituary Notice).

THE LANCET 100 YEARS AGO

From a leading article May 6th 1837 p. 232

In the two great endowed establishments of Southwark it is even determined by a written rule that no person is eligible to be a surgeon to the hospital unless he have served an apprenticeship with one of the surgical officers of the establishment. This is what is called an attempt to make the profession respectable that is to say by making it expensive and by restricting the selections of genius and talent which are to be displayed in the upper ranks of the profession from the more respectable and wealthier persons in the upper classes of society.

In pursuance of the same system we find that the hospital surgeons are permitted by the governors to charge each student twenty or thirty guineas for the mere privilege of walking through the wards of the hospital. Then, again, the use of the patients having broken, dislocated and ulcerated limbs is actually sold for a time to a student who is yearning for the title of doctor for the sum of fifty or sixty pounds. We know not how the provincial practitioners can be justly censured for the course which they have thought it their duty to pursue in obtaining their parochial office while not a word of blame is to be thrown out against the monopolising and hungry traffickers in disease and suffering in the great endowed hospitals of the nation.

But the attempt has now been fully made to secure the respectability as well as the pecuniary interests of the profession by rendering medical education expensive and never was there a more signal or self-evident failure displayed than has been exhibited in the effort which has been expended to carry into operation this fraudulent narrow minded irrational scheme.

From a *new* paragraph p. 234

The cerebral development of JAMES GREENACRE who was executed on Tuesday last for the murder of HANNAH BROWN was strictly confirmatory of the doctrine of phrenology.

From a letter on *The Ergot of Rye* Speed of its Operation p. 230

I am of opinion that contractions may and I think do take place in less than 15 minutes after the use of the seeds (cornutus). On referring to my case book I find notes of two cases wherein contractions came on in 12 minutes after the administration of the ergot and I also find a case published in THE LANCET of Sept. 20th 1827-8 by Mr J. C. Jerrard where the pains increased in 10 minutes after the exhibition of the ergot; but much depends on the quality of the ergot and the mode of preparing the decoction; if it be ground in a coffee-mill with a little lump sugar and boiled in a French pan I have found it more certain in its effect than when commonly produced in a mortar and boiled in an iron pan. I am Sir your obedient servant.

CHRISTOPHER BRADLEY M.B.C.S. & C.
Church near Blackburn Lancs. 4th April 1837

OBITUARY

ARCHIBALD DONALD, M D Edin, F R C P Lond,
F C O G

EMERITUS PROFESSOR OF CLINICAL OBSTETRICS AND GYNAECOLOGY
IN MANCHESTER UNIVERSITY

WE announced last week the death of the distinguished gynaecologist, Prof Archibald Donald, which occurred on April 18th at his house in Alderley Edge, Cheshire, in the 77th year of his age.

Archibald Donald, the son of Mr John Donald of Edinburgh, was born in 1860 and educated at Craigmount House School and the University of Edinburgh. He graduated as M.B., Ch.B. with honours in 1883, proceeding to the M.D. degree in 1886. He served



PROF DONALD

as house surgeon at the Royal Maternity Hospital, Edinburgh, and was then appointed resident obstetric surgeon at St Mary's Hospitals, Manchester. This was in 1885, and from that time forward to the end of his long career he worked in Manchester. After three years as a senior resident of St Mary's Hospitals he was elected to the honorary staff and was recognised at an early age as a leader in this branch of medicine. By this time he had produced a small but

valuable book on natural labour. In this introduction to the science of midwifery he disclaimed any intention of teaching the procedures needed in the presence of complications, but he defined and described the abnormalities which rendered further assistance desirable. The teaching was full and sound, and the book ran through eight editions. In 1895 Donald was elected gynaecological surgeon to the Manchester Royal Infirmary, and in 1912 professor of obstetrics and gynaecology in the University.

For those who have worked only under modern conditions it is difficult to visualise the circumstances in which a surgeon worked in 1888, the year Donald was appointed to the staff of St Mary's Hospitals, Manchester. It is true that the work of Lister was gradually permeating surgical work, but the methods were still, and for many years continued to be, those of antiseptics and included the carbolic spray and other methods, cumbersome, inefficient, and trying to operator and patient. There were no steam sterilisers for instruments, gown, and dressings, no gloves, no masks or caps, no electric light, no radiators, no Trendelenburg position, no reliable sutures. In these crude surroundings had worked the great pioneers of gynaecological surgery—Clay, Spencer Wells, Lawson Tait—and under these same disabilities began the work of Donald and his contemporaries who were to develop this branch of our profession into what we now know it.

Donald began his work with one great advantage over most of his contemporaries. St Mary's Hospitals provided one of the largest maternity centres in the country and being in the centre of a large industrial population in which rickets abounded it ministered to an enormous number of abnormal cases. Donald was the senior resident in this hospital for three years and was responsible each year for about 4000 births as well as acting as house surgeon to 40 gynaecological beds. It was a wonderful preparation for his life's work and gave him a practical clinical knowledge which few men of his age possessed.

Abdominal surgery was in its infancy and the number of patients who could be submitted to a major operation was necessarily restricted. This fact turned Donald's mind to the problem of prolapsus uteri, a disabling condition which abounded in a district employing so much female labour. Up to this time attempts had been made to improve the lot of these poor patients by the use of supports, by anterior colporrhaphy, by amputation of the cervix, or by repairing the perineum so that a pessary could be retained, but no one had devised any operation which could be considered a cure for this distressing state. Donald decided that the only likely way was a combination of these various procedures, and in spite of universal discouragement he made the attempt five times in 1888, in each case successfully. In his first two cases silver wire was the suture material, in both of these the wounds healed well and the women were able subsequently to return to their work as charwomen without any recurrence of their trouble. For this purpose silver wire had obvious disadvantages and Donald cast around for something more suitable. About this time he heard that some German surgeons were using catgut and he decided to try it as, being absorbable, it would be ideal for this type of operation if only it would hold sufficiently long to allow healing to take place. He used it in the remaining three cases in 1888 and was delighted with the result, especially as he could bury it and so build up the floor of the pelvis in layers, upon the technique of which a good colporrhaphy depends. The principle which he then evolved, of combining an anterior and posterior colporrhaphy with amputation of the cervix, making a strong pelvic floor and perineum by building up this tissue in layers with buried catgut, is still the method employed in one of the most successful operations in surgery—and from 1888 it has been continuously employed in his old hospital. The catgut first used by Donald in 1888 was imported from Germany—each hank in a small bottle of carbolic oil. This method of preparation was not wholly satisfactory and Donald experimented with many others and finally settled upon the one in which the catgut is soaked in alcohol and iodine. For a time he did try other suture materials but as his confidence in the preparation and strength of catgut increased he discarded these and during this century rarely used anything else. He must have been one of the first surgeons—if not the first—in this country to use it and he was certainly the first to rely entirely upon it. In the whole of his long career, at first using catgut ill prepared, he had only one case of tetanus.

In the realm of abdominal surgery Donald played a leading part, not so much in devising new operations as by perfecting and making workable the suggestions of others, his practical mind at once seizing upon the

casual and discarding the redundant. He was a brilliant operator with a long thin hand which could reach places inaccessible to more brawny colleagues. His hands were however always guided by his brain: he thought out beforehand what should be done and did it with delicacy, precision and speed and with complete confidence in himself. His inquiring and logical mind refused to accept views merely because they were ancient or had met with general acceptance. For long retroflexion of the uterus had been regarded as one of the common causes of female ill and if a uterus was found in this position it must be rectified and held in position by a pessary or operation. Donald could not accept this and pointed out on every possible occasion that the same symptoms occurred with anteverted as with retroflexed uteri and that many women with retroflexed uteri were symptomless. For long his was a voice crying in the wilderness and now that a more rational view is accepted his long fight may but should not be forgotten. He was a strong advocate of the curette: thus he did not use indiscriminately but only for specially selected cases and when he curetted he scraped the uterus quite clean. When a hysterectomy was necessary he believed in the clean sweep and removed both ovaries with the uterus. The conservation of an ovary on sentimental grounds made no appeal to him.

One of his outstanding features was his clinical memory which stood him in good stead in making a diagnosis in a difficult case. Generally he could recall a somewhat similar case and his skill in diagnosis was sometimes uncanny. Although best known as a gynaecologist, he was keenly interested in obstetrics and attended maternity cases up to the time of his retirement as he was a firm believer in the indivisibility of these two subjects. His earliest papers were on obstetrical subjects and just before his death he was writing about puerperal sepsis. He served upon the departmental committee of the Ministry of Health which reported upon the cause and prevention of puerperal sepsis and he held the view very strongly that efficient cleansing of the attendants would prevent most of these cases. At an early age he became the acknowledged leader in obstetrics and gynaecology in Manchester and the surrounding district and as time progressed his circle ever widened and he developed an enormous practice but even in his busiest years he found time to read occasional papers before the obstetrical section of the Royal Society of Medicine and he rarely missed a meeting of the North of England Obstetrical and Gynaecological Society where his ripe experience, clinical memory and humour made him one of the most popular speakers.

But first and foremost Donald was a clinician. A difficult diagnosis or a troublesome operation saw him at his best and ever the patient came first. The advances he made were in the clinical field and his writings were invariably on clinical subjects. Not that he despised the scientific side—far from it; he knew more pathology than he was usually credited with and was always interested in this branch and ready to apply any scientific fact. What irritated him was the pseudo scientific mind and the paper full of unproved theories based upon uncertain facts. Thus as a teacher Donald shone on the clinical side. For some years he was the professor of obstetrics and gynaecology at the Manchester University but systematic lectures full of theories and lists of names never appealed to him and he finally persuaded the University to bring his subject into line with medicine and surgery and to create a new chair of clinical

obstetrics and gynaecology. Here he was perfectly happy and at home, teaching by the bedside, recalling interesting cases from the vast storehouse of his memory, noticing signs unrecognised by others and finally proving at operation that his diagnosis was correct.

Prof Fletcher Shaw to whom we are indebted for much of the above gives the following personal picture.

Like all men of mark Donald had a strong character and he always had himself in perfect control. No matter how difficult or irritating the position he never betrayed what he felt by word or action. Always perfectly courteous he carried on outwardly quite cool and only those with intimate knowledge of him knew by the set of his jaw what he really felt. Slight in build and looking frail it was a wonder how he got through the vast amount of work which he did but he had a stronger constitution than he showed and he had the faculty of working without fuss or excitement. Upright, fearless and honest and entirely unself seeking he expressed his views openly though always with courtesy and with care not to hurt his opponent's feelings. He scorned the man who worked subterraneously or crookedly or pulled strings for his own glorification. What honours came his way—and they were many—gave him joy because they came unsought and generally from his own profession. He was generous and genial, radiating kindness and with a fund of quiet humour he loved his fellowmen and delighted to be with them as they with him. And as a colleague he was perfect. Kindly, courteous without jealousy, and ever ready to help he retained the friendship and respect of those he outstripped while in his juniors he inspired pride and devotion.

A surgical colleague at the Manchester Royal Infirmary also writes. To those who recall the extraordinary activities, physical and mental, alike of Archie Donald throughout a long and extremely distinguished professional career it must have caused considerable distress to witness the rapid decline of the last few months during which he was confined indoors, quite unable to enjoy his beautiful garden which he loved so well and on which he had expended so much thought, interest and energy. Of the details of such a career others, his colleagues in his special sphere of work are in a better position to testify than the writer but it is of Donald the man himself that one would pen a few words in most affectionate memory. Widely recognised from his early days as the outstanding exponent of his chosen specialty, Donald was throughout completely free from any taint of professional jealousy and his help was always most willingly and cheerfully given to his younger colleagues. Indeed, most of the honorary staffs of the M.R.I. and the St. Mary's Hospitals owe their position largely to his support since his influence with the governing bodies was greater than that of any other individual medical man and to have Donald on one's side practically connoted success in such elections. His modesty so far as concerned his own most valuable and original work was earned almost to the point of absurdity. Endowed with an almost unequal power of sifting the wheat from the chaff among the many suggestions of his medical friends of his day he was ever quick to pick up and to put into practice those ideas which seemed to him to be of real progress. A person of such calibre it is not surprising that he was at times intolerant of sham and every-dayness and although his

sought did not always coincide with the seeker's own inclinations yet in the long run it invariably proved correct. No one could be more loyal or generous as a friend. At the outbreak of the war Donald, then aged fifty-four, joined the *à la suite* staff of the 2nd General Western Hospital with the rank of captain, becoming thereby junior to most of those considerably junior to himself in civil practice, for some months, in addition to his other military duties, he took his turn to 'live in' and do what was, in reality, merely the work of a house surgeon—an admirable instance of his loyalty and devotion to what he thought to be his duty."

Prof Donald was at different times president of the obstetrical and gynaecological section of the Royal Society of Medicine, of the North of England Obstetrical and Gynaecological Society, of the Manchester Medical Society, and the Manchester Pathological Society. He was a LL.D. of the University of Edinburgh, and D.L. for the county of Lancashire. He married Maude, daughter of Mr R. B. Wilkinson, who survives him with two daughters and two sons. The home life was a very happy one, but they had cruel blows in the loss of two sons. The elder, an Oxford undergraduate, was killed early in the war at Gallipoli, and the third son, a barrister, died after a long illness. He is survived by a widow, two sons and two daughters, one of the sons being in medical practice in Manchester as a consulting physician.

SIR THOMAS YARR, KCMG, CB, FRCSI

WE regret to record the death of Major General Sir (Michael) Thomas Yarr, a distinguished officer in the R.A.M.C., and particularly well known for his excellent work in ophthalmology in connexion with military service. This occurred on April 24th in a London nursing home.

Thomas Yarr was the son of Thomas Yarr, J.P., of Rathgar, and was born at Cloughjordan, Tipperary. He was educated at the French College, Blackrock, and Mesnières. He went for his medical training to the school of the Royal College of Surgeons in Ireland, took the diplomas of L.R.C.P.I. and L.M. in 1882, and

almost immediately joined the R.A.M.C. He distinguished himself at Netley, gaining the Herbert prize, the Parkes medal, and the Martin and Montefiore memorial medals. He took the FRCSI diploma and was at first attached to the 1st Battalion of Coldstream Guards. From 1895 for the following four years he was seconded to serve under the Foreign Office as physician to the Crown Prince of Siam. At the expiration of this office he was appointed to the staff of the Governor of Bombay, a post which he held

for five years—i.e., until 1906, when he was promoted lieutenant colonel. Both in Siam and in Bombay Yarr made his mark by his quiet efficiency and broad

grasp of affairs, and while in Bombay his interest in ophthalmology developed, resulting in special work in connexion with diseases of the eye peculiar to the East. He now used his leave in attending continental clinics in Berlin, Paris, and Vienna, and held also the post of chief clinical assistant at the Royal London Ophthalmic Hospital. Major Yarr saw service in the South African War and was present at operations in the Orange Free State, Transvaal, and Cape Colony, receiving the Queen's medal with four clasps. His experiences there were drawn upon in his text-book, *A Manual of Military Ophthalmology*, which appeared in 1902. The book was directed particularly to the needs of medical officers of the Home, Indian, and Colonial Services, and in its plan it followed familiar lines, but because of their common occurrence in soldiers, particular stress was laid on the gonorrhoeal, syphilitic, and malarial infections in relation to diseases of the eye. Also he laid stress on the regulation in the Army Orders, which had just been issued, giving permission to both officers and men to wear spectacles. The regulation was due to the fact that in the South African War the bad sight of many combatants was held to have constituted a real drawback to certain operations. Particular attention was also paid by Yarr to injuries to the eye from gunshot wounds and the entrance of foreign bodies into the eye, a subject which he further dealt with in a paper communicated to the proceedings of the annual meeting of the British Medical Association in the same year.

At the outbreak of the European War Yarr served as A.D.M.S. and D.D.M.S. of the Mediterranean Expeditionary Force. He was present at the landing at Gallipoli, and later did distinguished service in Egypt and at Malta, where the hospital organisation was put to a heavy strain by the large number of cases brought to Valetta from every arm of the fighting services. Yarr was promoted temporary surgeon general in 1916, was mentioned in dispatches, received the C.B., and, in 1917, was promoted major general and appointed a KCMG. He was given also the Legion of Honour and became a Knight of Grace of the Order of St John. At the conclusion of hostilities he was selected to be Inspector General of Medical Services, a post which he held until 1921.

Major General Yarr was 75 years of age at the time of his death. He was unmarried.

THOMAS GUY MACAULAY HINE, OBE, M.D. Camb

Dr Macaulay Hine, who died on April 25th, aged 66, was the son of the late Mr George Hine, F.R.I.B.A., consulting architect to the Royal Commission in Lunacy, who built some twenty of our largest asylums including Claybury. Dr Hine was educated at Charterhouse and King's College, Cambridge, and went for his medical training to St Bartholomew's Hospital. He graduated as M.B. Camb in 1904 and became house physician to Sir Norman Moore.

Hine possessed a special flair for engineering, and in his youth he spent a year in Germany making a practical study of it. At Cambridge, however, he decided to study medicine, and after he had qualified and finished his house appointment settled down to study the fermentative characters of organisms of the diphtheria group. He wrote his M.D. thesis on the results of this investigation, which showed for the first time that certain carbohydrates, especially saccharose and dextrine, can have a useful application for the purpose of identifying the Klebs-Löffler



SIR THOMAS YARR

(Photograph by Russell)

for five years—i.e., until 1906, when he was promoted lieutenant colonel. Both in Siam and in Bombay Yarr made his mark by his quiet efficiency and broad

bacillus. When during the first winter of the war cerebro-spinal fever broke out among recruits then in training and a large epidemic was threatened special measures became necessary for checking its spread. The procedure adopted was under the direction of Sir William Horrocks assisted by the late Dr R. J. Reece and by Dr Mervyn Gordon. A central laboratory was set up at Millbank with a travelling laboratory attached to it. Dr Gordon gave practically the whole of his time to the research and as various points came to light they were applied by Dr Hine who acted as O.C. Central CSF Laboratory. Thus when a special medium was arrived at for detecting the meningococcus in the nasopharynx Dr Hine manufactured and distributed it on a large scale to military laboratories some fifty in number all over the country. Later on he undertook in the same way the preparation and distribution of monotypical agglutinating sera and suspensions wherewith to check them and managed to do a piece of research work as well on the optimum procedure for the purpose of preparing this serum. Later he undertook in the same way the distribution of special monotypical therapeutic serum and assessed its potency in a careful report. The special reports Nos. 3 and 60 on cerebro spinal fever of the Medical Research Council series contains several valuable contributions by him.

Towards the end of the war when some form of mass disinfection became desirable for diminishing the abundance of the meningococcus in the nasopharynx experiments at the Central Laboratory made on actual carriers showed that the comparatively delicate meningococcus can be temporarily got rid of by causing carriers to inhale steam laden air charged with droplets of zinc sulphate (1/50). Hine's previous training as an engineer now enabled him to devise a special jet for the purpose of keeping the air of an inhaling room charged with zinc sulphate droplets of the required strength and later the Navy adopted this device employing air compression instead of steam for the purpose of spraying. For his services during the war Hine received the O.B.E. and was given the honorary rank of Major. After the war he assisted the administrative staff of the Medical Research Council for a time, but for several years past he lived in retirement in Devonshire.

In 1918 he married Miss Margaret Lillywhite who survives him with two children a son aged 16 and a daughter. Dr Hine's sister Mrs Coxon is the well known novelist Muriel Hine. Dr Hine had been a past master of the Worshipful Company of Fruitcrs and was an enthusiastic fisherman and very popular in lay as well as medical circles where his genial presence will be much missed.

PARLIAMENTARY INTELLIGENCE

THE FACTORIES BILL IN COMMITTEE

THE Factories Bill was further considered by a Standing Committee of the House of Commons on April 20th. Major LLOYD GEORGE was in the chair.

The discussion was resumed on Clause 68 which provides among other things that subject to certain exceptions, the total number of hours worked by women and young persons in factories exclusive of intervals for meals and rest shall not exceed 9 in any day nor exceed 48 in any week; that the period of employment shall not exceed 11 hours in any day and shall not begin earlier than six o'clock in the morning nor end later than eight o'clock in the evening or on Saturday one o'clock in the afternoon; provided that where women or young persons are not employed on more than five days in the week the total hours worked may extend to 10 and the period of employment may extend to 12 hours, in any one day.

Mr A. SHORT moved an amendment to limit the hours of work of women in factories to 40 per week. At the suggestion of the chairman the Committee agreed to discuss at the same time two other amendments on the Order Paper proposing that the hours of work of young persons in factories should be limited to 7 per day and 40 per week. Mr Short said that up to now the Committee in the consideration of this clause had acted on the advice of the Home Secretary taken a most reactionary course. None of the amendments put forward by the Labour Party which were calculated to improve the position of employees which would come under this clause had been accepted. He would like to know whether the Home Secretary and the Home Office were in the pocket of the employers as to the provisions of this Bill. Women were more prone to accidents than men and now that workshops were being included under this Bill he had no doubt that there would be an increased number of accidents. They must make this Bill worthy of the occasion. Forty-eight hours work per week was too long for women. On the question of hours the employers of this country had been most reactionary and retrograde and it was for Parliament by legislation to force them to introduce a 40 hour week.

Mr GRAHAM WHITE said it was absolutely necessary for the well being of the country that young people should be fit both mentally and physically. The hours of work permitted under the Bill did not allow that degree of fitness to which the individual was entitled and which the nation required.

Mr MCCORQUODALE said he was particularly interested in young persons but he thought that having decided to reject the 40 hour week for men they must necessarily reject it for adult women. He thought that this country would be well advised to hold its hand in regard to the question of the 40 hour week until it had seen what would happen in France. According to his information at the present time the net result of the 40 hour week being put into practice in France had been to increase prices by nearly 30 per cent which meant that the working men and women in France were 30 per cent worse off than they were before as they got the same money wages. But the question of young persons—especially those under 16—was entirely different and he strongly urged the Government to meet them in that matter. He did not believe that young persons—especially those under 16—could work 48 hours a week and maintain the best of health.

Mr ELLIS SMITH said that he was concerned about the young people who went into industry fresh from school particularly those between the ages of 11 and 16. More and more in modern industry they found that young persons were being put on repetition work. Work was being speeded up in this way until the increase in production in Great Britain since 1920 was greater than in any other capitalist country in the world. In big factories employing repetition methods a new process was being carried out known as micromotion introduced from America. Persons were specially trained to watch people at work in the factories. Films were taken of the people at work and afterwards discussed by managers and assistants in order to decide what unnecessary use of human energy there had been and what unnecessary operations could be cut out. That was a good thing. It was important in these times to increase production and obtain the maximum output in the least number of hours possible but instead of being looked upon as a blessing methods of increased production were

regarded as a menace by the workpeople because they were not getting the benefits from this increased production which they ought to do.

Mr DENMAN said that he did not think they could confine the working hours to seven a day. He thought that the Committee ought to agree to limit the hours of young persons to 40 per week. Since the passing of the Education Act the Government had launched a great programme of physical development and a 40-hour week was the maximum which was consistent with the declared policy of the Government in those respects. The refusal of a 40-hour week for young persons would cause severe disappointment and cause a drift away from the support of the National Government.—Viscountess ASTON said that Mr Denman had made it almost impossible for the Government to reject the proposal for a 40-hour week for children.

Wing Commander WRIGHT said that as an employer with a factory, in which a good deal of repetition work was done, he was in entire agreement with almost everything that Mr Ellis Smith had said. There was no question that they could get the same sort of production in very much shorter hours and if they saw that their workpeople got a just reward for the extra effort they must make. He believed that a 40-hour week was in sight. In his own factory the workpeople always worked only 45 hours a week and they found that the workers were better, healthier, and happier, that they earned the same money, and that production had not decreased. He would like to see the hours of work of young children up to 16 reduced so far as to make it uneconomical to employ them for production in a factory while making the hours sufficient for them to be employed for instruction.

Sir J SIMON, Home Secretary, said that there were at present about 3,000,000 men employed as workpeople in manufacturing industries, about 1,500,000 women over 18, and something like 1,000,000 young persons under 18, and of that number over 500,000 were under 16. The supply of juvenile labour in this country would fall off in a very few years, and it was much better to deal with the matter deliberately now before trouble had been stored up. But it would be a very great mistake to regard the proposals of this Bill as though they did not represent a very great improvement in this respect. As far as the present law was concerned, from the point of view of permitted hours, juveniles between 14 and 16 and between 16 and 18 and women of any age were all treated, and were, on a level. The hours at present permitted for women and young persons classed together were 55½ in textile factories and 60 hours in other factories. He was glad to think that in most cases these very long hours were never touched. But at present there was an agreed working week—say of 48 hours—and on top of that there was a very large quantity of overtime which might extend over the whole year. In that respect women and young persons up to now had not been treated separately.

The first thing to notice about the present Bill was that it contained a gradation as regards hours. The question to decide was whether the gradation was steep enough. Under the Bill as at present drawn up adult men, as before, were left to collective bargaining and so on. There was a statutory limit of 48 hours a week for women with permissive overtime, which was limited both in number of hours and in number of weeks. As regards young persons between 16 and 18 there was a 48 hours week, but a more limited provision concerning overtime, and as regards young persons between 14 and 16 there could not be any overtime. The gradation was an entirely new and important principle. There came the question as to whether they could do better than was done in the Bill as regards juveniles between 14 and 16. He had for some time taken the view that they could. He would like to see the permitted hours of juveniles between 14 and 16 reduced. On inquiry the medical advisers to the Home Office

had advised him that the existing 48 hours could not be said, on present information, to be injurious to health, but, naturally, they would be very glad to see more time for leisure and recreation. He would put the case rather on the ground that whether they considered educational policy or physical recreation, or the future conditions under which young citizens were going to grow up, it was high time that they had a more limited number of working hours than 48 a week.

Mr GIBBINS. Do the Minister's medical advisers, in suggesting that it is not injurious to work 48 hours a week between 14 and 16 years of age, have regard to any consequences later for young persons who work those hours?—Sir E GRAHAM-LITTLE. Is the right hon. gentleman aware of the unanimous opinion expressed in the medical press on this subject?

Sir J SIMON said he had stated the opinion of his skilled advisers, but on general grounds he took it that it would be better if they could get the hours reduced. But first of all more information must be obtained as to what the hours ought to be, and therefore he suggested that the alteration should be made when the Bill reached the Report stage. He did not believe that it would be possible to introduce such a provision as early as other provisions in the Bill. There must be sufficient time for the important industries to consider the question of reorganisation, but they could possibly bring the improvement into force within two years. They must leave to a particular industry the opportunity of proving, if it could, that in each case a figure different from the statutory figure—it might not be as much as 48, it might be something between the two—was justified. His view was that before that could be done three things would have to be proved: first, that the hours in that branch of industry could not reasonably be regarded as injurious to the health of young people; secondly, it would be right to stipulate that the industry must prove that the hours were not only consistent with the health of the children, but that the organisation and proper carrying out of that industry made it desirable that the young people should work these longer hours side by side with their elders; and thirdly, the industry would have to prove that the juveniles would be engaged in work of such a character as would familiarise them with and help them to train for processes in which the older people were employed and would be likely to lead up to their employment in those processes. He was not saying that these exceptions would be taken advantage of, he did not know to what extent they might be necessary, but it seemed that they constituted a fair proposal to make to industry.

Mr SALT. Would the suggestion regarding health cut out all repetition work?—Viscountess ASTON. And would the exception with regard to children learning a trade be dependent on proof that they were really learning it?

Sir J SIMON said that that was his idea. He had not the least doubt that as a result of his statement the Home Office would receive a great deal of information before the Report stage of the Bill. He would be happy indeed if that information proved to be in support of an improvement of this sort.

Mr VIANI said that the Labour Opposition were grievously disappointed with the Home Secretary's statement.—Mr McCORQUODALE said he thought that the Home Secretary had met the Committee in a very frank and fair manner. The Committee adjourned.

The consideration of the Bill was resumed on April 22nd. The discussion on Clause 68 was continued.

Sir J SIMON, referring to his statement at the previous sitting, said that the modifications which he had sketched out and which he had suggested should come into force after an interval of two years would have to be expressed in a clause which provided that after that interval the figure 48 would be altered to a smaller figure with the other provisions that he indicated. That could properly be done in a

new clause which would be Clause 69. Clause 68 would be a provision as to what would happen when the Bill passed and the new Clause 69 would be a provision as to how that would be altered after an interval. After further reflection he had come to the conclusion that the proposed change could better be made in Committee than on the Report stage and he would undertake that that should be the procedure followed.

Mr WAKEFIELD urged that the Home Secretary should reconsider the position of the hours of work of young persons between the ages of 16 and 18 with a view to applying similar conditions to those which he had foreshadowed for young people between 14 and 16. It would be impossible to carry out the provisions of the Bill for physical training and recreation unless young persons worked shorter hours. The health of our young people was the greatest asset we possessed and it was important especially as the birth rate was now declining that we should make every effort to preserve it.

Viscountess ASTOR said it was just as important that hours should be reduced for children from 16 to 18 as for those between 14 and 16. This was a wonderful opportunity and if the Government did not take it it would make their grant for physical fitness absurd—Mr BROAD said he questioned the medical advice given to the Home Secretary to the effect that factory work had no effect on the health of children. Such work stunted them in mind and body. He hoped that they would be able to restrict the hours of employment of young people until the age of 21.

Sir E. GRAHAM LITTLE said that there were certain medical and educational arguments which had not been brought out quite explicitly and which made a very special class of the children from 14 to 16 years of age. It was for that class that he wanted very particularly to plead. Medical opinion was unanimous in wishing to restrict the hours of labour of children from 14 to 16 years of age. There was no division of opinion on that matter in any informal circle. He hoped that the Home Secretary would go beyond his official advisers in that respect. In the period from 14 to 16 years of age the whole structure of the child physical and psychological changed. A very great deal of work had been done—he was glad to say chiefly in this country—in investigating the psychology of that period. It was a very important consideration. The mental and physical stability of the child in those years was in a state of turmoil. The child from 14 to 16 years of age ought not to be in a factory at all. It was a most distressing thing that he should ever have been allowed to be there. Our descendants would think as harshly of us for having permitted it as we thought harshly of those persons who allowed children of tender years to work in a factory for 20 hours a day. The medical point of view was important but they pleaded also for the educational point of view. The spirit of enthusiasm, training, discipline and forward looking was what the children lost if they went into a factory. They did not want the children to lose it. Children who go on from 14 to 16 should be allowed to complete that part of their education, adding to the structure of theory and science and fitting themselves to become really skilled workers in trades and occupations. The work which they did in factories from 14 to 16 was in no way a preparation for a trade. They lost all the incentive which they learned at school and they had a great period of indolence as regarded mental activity because of the absence of any incentive. At 18 they were lifeless persons and were thrown again on to the labour market. That process was utterly uneconomic and foolish. They would be contributing to the making of a C3 nation if they did not make a great effort the opportunity for which was presented itself for physical reconstitution.

After further discussion the Committee divided on a Labour amendment limiting the working week for women and young persons to 10 hours. This was negatived by 21 votes to 15.

Mr LLOYD Under Secretary Home Office moved an amendment substituting 7 o'clock for 6 o'clock as the hour for beginning work in factories. He said that the Government were prepared to agree that work should not begin before 7 o'clock except in special cases where authorized by the Secretary of State. Under a new clause which would be moved later the Secretary of State would be empowered to allow the period of employment to begin earlier than 7 o'clock but not earlier than 6 o'clock in the case of a particular class of factory where the exigencies of the trade or the convenience of the persons employed so required.

The amendment was agreed to.

Mr SILKIN moved an amendment providing that the period of employment should end not later than 6 o'clock instead of 8 o'clock.

Mr LLOYD said that in certain circumstances it was for the convenience of the workers that they should start late. It would be impracticable as a matter of administration to fix an earlier period and then to give a large number of exemptions.

After further discussion Mr Lloyd said that he had been impressed with the arguments put forward and he asked the Committee to allow the Home Office to reconsider this matter from the point of view of young persons. The amendment was withdrawn.

Subsection (e) of Clause 68 provides that a woman or young person shall not be employed continuously for a spell of more than 4½ hours without an interval of at least half an hour for a meal or rest, so however that where an interval of not less than 10 minutes is allowed in the course of a spell the spell may be increased to 5 hours.

Mr WHITE moved to leave out the words "or young person" from the subsection. He said that it was not the intention of the amendment merely to take young people out of the protection of the clause. The amendment had to be read in conjunction with another providing for the limitation of spells of work of young people to 3½ hours.

Mr LLOYD said that the provisions in the Bill had been put in as a result of the experience of the Factory Department of the Home Office in order to provide the intervals and rest pauses that were necessary but also to avoid making unnecessary long rest pauses which were inconvenient and much resented by the workers concerned. He thought they ought to have heard some stronger reasons for the insertion of the amendment. These proposals had been incorporated in the Bill as a result of work subsidised by the Medical Research Council. Mr WHITE said that 4½ hours work at a time was a sufficiently long period for any young person who came straight from school. The amendment was negatived.

Sir E. GRAHAM LITTLE moved to leave out the words "four and a half" and to insert the word "three" in the subsection. He said that it was well established that spells of work of more than three hours especially in the case of young people caused attention to flag and the incidence of accidents was very largely due to and increased by inattention. Practical proof of that was to be found in statistics.

Mr LLOYD said that the hon. Member had put forward medical opinion that the proposal in the Bill was too long and that three hours was the maximum that ought to prevail. That was not the conclusion to which the Industrial Health Research Board came when they made a special investigation into these subjects. Their general conclusion after an examination of sickness records and so on was that it was impossible to obtain reliable evidence as to the change in the duration of work up to affecting sickness rates. Therefore in this matter medical opinion was divided.

Sir E. GRAHAM LITTLE: Does sickness rate include accidents?—Mr LLOYD: No, but from the accidents point of view the reports of the factory inspectors tend to show that it is not at the end of the period of work even in regard to young persons.

that accidents mostly occur. They tend much more to occur somewhere about the beginning of work or during periods of maximum production when there is a tendency to work too fast.

The amendment was negatived.

The further consideration of the Bill was adjourned.

GOVERNMENT AND MILK POLICY

NEW BILL PROMISED

In the House of Lords on April 27th, on the motion of Lord MARKS, the Poole Corporation Bill was read a second time.

Lord CRANWORTH moved an instruction to the Committee which will consider the Bill to delete Clause 21, which relates to by-laws "as to pasteurisation, &c., of milk." He said that the Poole Corporation admitted that this clause was included in the Bill because of the recent outbreak of typhoid at Bournemouth. This was panic legislation.

Viscount HALIFAX, Lord Privy Seal, said that the health of the people must be the first and last consideration, and the question of vested interests did not arise. The Bill was not opposed on petitions, but he understood it was the intention of the Chairman of Committees to refer the Bill to a Select Committee of the House in order that the proposals as to pasteurisation might be examined. In the view of the Government such an inquiry would be unsatisfactory and probably inconclusive. An inquiry of that kind ought not to be held in connexion with any particular locality, the question could only be considered as a general one affecting the country as a whole. The Government had reviewed the whole matter, and he was authorised to announce that it was their intention to bring forward long-term legislation dealing with milk policy generally in the near future. In this connexion the Government would examine the question of pasteurisation in the light of all the evidence that was available with a view to deciding whether or not it would be in the public interest, with due regard to the interests of the milk industry, to include provisions with regard to it in the legislative proposals. He supported Lord Cranworth's motion.

Viscount DAWSON OF PENN said that the Poole experiment would have been a very valuable one, but they were obliged to be influenced by the question of cost. If it was to be such a costly matter he could see the force of the argument for waiting for a general measure. But no indication had been given how long it would be before that general measure came into operation. There was an overwhelming body of evidence in every civilised country that pasteurisation was an efficient means of preventing the continuance of certain infectious diseases. The mortality from tuberculosis had declined, but there had not been so much improvement in regard to the bovine type of infection as in regard to the human form of infection.

Lord Cranworth's motion was carried.

NOTES ON CURRENT TOPICS

In the House of Lords on April 22nd the Hydrogen Cyanide (Fumigation) Bill passed through Committee.

The Lords amendments to the Education (Deaf Children) Bill were agreed to in the House of Commons on April 21st. On April 22nd, in the House of Commons, the Special Areas (Amendment) Bill passed through Committee.

In the House of Lords on April 27th the Special Areas Bill, which was read the third time in the House of Commons on April 26th, was read a first time.

In the House of Lords on April 27th Lord STRATHCONA AND MOUNT ROYAL moved the second reading of the Maternity Services (Scotland) Bill.

The Bill was read a second time.

The Edinburgh Royal Maternity and Simpson Memorial Hospital Order Confirmation Bill was read the third time in the House of Commons on April 26th.

Consideration of the Widows', Orphans', and Old Age Contributory Pensions (Voluntary Contributors) Bill was concluded by the Standing Committee of the House of Commons on April 27th. Sir KINGSLEY WOOD, Minister of Health, announced that on the third reading in the House of Commons he would make a statement with regard to the date of the coming into operation of the scheme. The Bill was ordered to be reported, with amendments, to the House of Commons.

QUESTION TIME

WEDNESDAY, APRIL 21ST

Medical Reports on Gaol Conditions in Kenya

Mr DAY asked the Secretary of State for the Colonies whether he would give particulars of any recent reports on gaol conditions that he had received from the local medical authorities in Nairobi, Kenya, and the number of deaths from tuberculosis that had been recorded at the Nairobi prison for each of the last three years, and what steps it was proposed to take to further improve existing conditions.—Mr ORMSBY GORE replied: I have received no reports from the medical authorities in Kenya relating specifically to gaol conditions in the Colony. The annual reports of the Prisons Department for the years 1933, 1934, and 1935 indicate that the total deaths in the Nairobi prison during those years were 12, 31, and 22 respectively, of which more than half were due to pneumonia. No deaths were due to tuberculosis. A separate ward for the hospital treatment of patients with this disease was constructed in 1933.

Mr DAY: Does the report show that the conditions in this gaol are considerably worse than they are in other Colonial prisons?—Mr ORMSBY GORE: No, Sir.

Hillingdon Hospital and Omnibus Services

Mr DAY asked the Minister of Transport whether he was aware that there was no omnibus service from the terminus at Hillingdon Church to the Hillingdon County Hospital, Middlesex, which necessitated out-patients attending this hospital daily walking long distances, and caused many of them to rest by the wayside or collapse on arrival at the hospital, and if he would make representations to the omnibus authorities serving this district asking them to continue the omnibus service to this hospital during certain hours.—Mr HORE BELISHA replied: The Board have informed the councils concerned that they are prepared to make application for a route between Uxbridge and West Drayton passing the hospital as soon as the roads are suitable for omnibus operation.

THURSDAY, APRIL 22ND

Irish Casual Labour and Insurance Payments

Captain McEWEN asked the Minister of Labour whether he was aware that in the case of casual labour from the Irish Free State contributions to the national health and unemployment insurance funds were demanded from employers, and, seeing that in most cases the labourer did not remain in this country for as long as the statutory six months which would enable him to qualify for benefit, would he take steps to alter this position.—Mr ERNEST BROWN replied: Under the general scheme of unemployment insurance joint contributions are payable in respect of all persons employed in insurable employment in Great Britain. Under the agricultural scheme persons not domiciled in and ordinarily resident outside the United Kingdom are excluded from unemployment insurance. Their employers are, however, required to pay employers' contributions in order to avoid a special inducement to employ such persons. In the case of health and pensions insurance, there is an arrangement whereby contributions paid in respect of employment in Great Britain count for benefit in the Irish Free State.

Coroners and Post-mortem Examinations

Mr WILSON asked the Home Secretary whether he could state for the last available year and for other than county boroughs the number of post-mortem examinations directed or requested by coroners and in how many of these cases the examination took place in hospitals, in

mortuary premises and in other places respectively—Sir JOHN SIMON replied. Excluding the City of London, the County of London and county boroughs forming complete coroners' districts the figure for 1936 was 10,274. I have no information which would enable me to answer the second part of the question.

Mr WILSON: Is the right hon. gentleman aware that on a recent occasion there was no fit place for a post mortem examination and that it was held on the village green—Sir J. SIMON: I do not know that.

Magistrates and the Birching of Boys

Mr SHORT asked the Home Secretary if he was aware that nine boys were ordered to be birched by justices in the West Riding juvenile court, Doncaster, on April 7th, whether the sentences had been carried out and whether seeing that a committee was being appointed to consider the question of birching he proposed to advise magistrates and others not to order birching between now and the committee reporting—Sir JOHN SIMON replied. Yes, Sir, nine boys were ordered on April 7th to receive three strokes of the birch. Eight were birched on that day, a medical officer certified that the ninth was unfit for the punishment. As it must be widely known that I have decided to appoint a committee to consider the question I do not think that further action on my part is required.

Mr SHORT: Will the right hon. gentleman go a little further than that and advise magistrates not to order such sentences having regard to the fact that a committee of inquiry is being appointed?—Sir J. SIMON: I do not think I can do that. The duty of the committee will be to ascertain and to advise and I am hurrying up the appointment of the committee in every possible way. In the meantime I am sure that benches of magistrates will realise that I regard this subject as one which needs investigation.

Deaths in Armley Gaol, Leeds

Mr LOWN asked the Home Secretary whether he would make a statement concerning the death of one man two days after admission to Armley Gaol, Leeds, as a debtor and another, 19 years of age, who had committed suicide in the gaol during this month and if he would institute an inquiry into the circumstances—Sir JOHN SIMON replied: I have already made careful inquiry into both these cases. The first prisoner was a man of 43 who was received into Leeds prison on April 2nd. He was examined on admission by the medical officer and found to be suffering from valvular disease of the heart. In view of this it was arranged that he should be given no work requiring physical exertion. On the night of April 3rd he died—apparently in his sleep. The law requires that there shall be an inquest on every death in prison and the jury found that death was due to natural causes. There is no suggestion that anything in his treatment in prison contributed to his death, and there is nothing the prison staff could have done to prevent or to render less likely this sudden heart failure. The second case was that of a young man serving a sentence of three months in the second division. He was examined on his admission on April 2nd and there was nothing wrong with him physically or mentally. His conduct while in prison was good; he gave no trouble and there was no question of any disciplinary treatment. On April 12th he was at work in the morning in association with other prisoners and there was nothing abnormal in his behaviour. At about 1.45 he was in his cell and was seen by the medical officer in the course of a routine round of the cells. He was then quite cheerful. At 1.15 the librarian officer who distributes books to prisoners visited his cell and the prisoner was then sitting reading. At 1.40 he was found dead, having hanged himself from the window bars of his cell. In this case also there was an inquest. There was nothing the prison staff could have done to prevent this tragic occurrence and there is no suggestion that there was anything in the nature of harsh treatment which might have contributed to this impulsive suicide.

Mr LOWN: Is the right hon. gentleman aware that there is some uneasiness in Leeds about these two tragic events and will the Home Office not call for some further inquiry into this matter as well as other matters in

connexion with our prisons so as to remove the possibility of such happenings as these?—Sir J. SIMON: I am not at all surprised that people in Leeds or elsewhere should feel anxious about these incidents and they are deeply distressing. I need not say that to the Home Office but I have given information quite impartially and I hope very much that with the hon. Member's help that will allay public anxiety about these two cases.

Provision of School Canteens

Viscountess ASTON asked the President of the Board of Education whether in view of the growing realisation of the importance of nutrition and particularly of the fact that children who underwent physical exercises should be properly fed, he would take measures to ensure that no new school, whether for juniors or seniors, was built without provision being made for a canteen—Mr OLIVER STANLEY replied: I have already drawn the attention of local authorities to the desirability of providing school canteens at schools where children come from a distance and in the consideration of plans for new senior schools this point is always borne in mind. I am also prepared to consider any proposals by local authorities to make arrangements for school dinners in schools where children do not come from a distance but I am not prepared to require the provision of canteens in all new senior and junior schools.

Anthropometric Surveys of School-children

Mr EDE asked the President of the Board of Education if he would publish the results of the anthropometric survey made by his officers of the children attending the Alderman Wraith Secondary School, Spennymoor County Durham, the Sarbston County School for Boys, Surrey, and the Woking County School for Girls, Surrey—Mr OLIVER STANLEY replied: I do not think that the subject is one of sufficient general interest to justify separate publication of the particulars but I am having a copy placed in the Library of the House for hon. Members who may be interested. Moreover I understand that the Board's chief medical officer proposes to refer to the matter in his next annual report.

Mortuaries

Mr WILSON asked the Minister of Health how many local authorities other than those of county boroughs had provided mortuaries as empowered by Section 143 of the Public Health Act of 1875; and how many had not made any such provision—Sir HENRY WOOD replied: I have no complete information on this subject but since April 1st 1920 loans have been sanctioned by my department for the provision of mortuaries by 63 local authorities other than county boroughs.

Maternal Mortality Reports

Mrs TATE asked the Minister of Health when the report on the special investigations into maternal mortality made by his officers in various parts of the country would be available—Sir HENRY WOOD replied: I hope to lay this report before the House in the course of the next few days.

Infantile Mortality

Mr THORNE: Has the Minister any reasons why there is such a very low infantile mortality in Letchworth?—Sir K. WOOD: Letchworth is a very small unit, the total births being about 700 or less each year. During the past few years the infantile mortality rate has been 1.62 per 1,000 live births.

Mr THORNE asked the Minister of Health the rate of infant mortality in the city of Letchworth and if he can say what is the average infantile mortality for England, Wales, and Scotland—Sir HENRY WOOD replied: For 1935 the last year for which separate figures are yet available the mortality rates of infants under one year of age per thousand live births were: Letchworth, U.D. 1.62; England, 36; Wales (including Monmouth), 63. With regard to Scotland the hon. Member should address an inquiry to my right hon. friend the Secretary of State.

Hospital Facilities in Newfoundland

Mr BROOKE asked the Secretary of State for Dominion Affairs whether any steps were being taken to remedy the lack of hospital facilities in Newfoundland which was shown in the report of the Department of Health and Welfare, and whether any measures are contemplated to combat the high rate of infant mortality and the prevalence of tuberculosis—Lord HARTINGTON, Parliamentary Secretary for Dominion Office, replied The measures now in progress for the improvement of the hospital facilities in Newfoundland, including the enlargement of certain hospitals at St John's and the completion of a chain of Cottage Hospitals outside the capital, were summarised in chapter iv of the annual report of the Commission of Government for 1936, Cmd 5425 My right hon friend has recently received from the Governor detailed proposals for the extension of the Tuberculosis Sanatorium, and a special survey of tuberculosis conditions is in progress Consideration is also being given to the establishment in outpost districts of prenatal clinics and child welfare services corresponding to those in operation at St John's I may add that special attention will be given to the improvement of medical and health facilities in the formulation of the long term programme of economic reconstruction which is now under consideration

Mr PETHERICK Is it not the case that a considerable number of additional medical officers have been appointed?—No further answer was given

MONDAY, APRIL 26TH

Medical Practitioners and Health Insurance

Mr RHYE DAVIES asked the Minister of Health whether he was now able to state the terms of reference and the personnel of the tribunal to inquire into the fees paid to panel doctors under the national health insurance scheme—Mr HUDSON, Parliamentary Secretary to the Ministry of Health, replied No, Sir The arrangements for the inquiry are not quite complete, but I will inform the hon Member as soon as they are settled

TUESDAY, APRIL 27TH

The Army and Blood Transfusions

Mr WAKEFIELD asked the Secretary of State for War what supplies, if any, were available of human blood suitable for transfusion, grouped and bacteriologically tested, for large-scale emergency treatment—Mr DUFF COOPER replied The Army policy is not to store blood for large-scale transfusion, as the period for which this can be done is very limited Each military formation has a number of donors grouped and tested who are available for this service

Mr WAKEFIELD asked if the right hon gentleman was aware that in Russia large stores of human blood were available and had been used very successfully in cases of emergency—Mr DUFF COOPER said that there were reports to that effect, but it was more satisfactory to store our blood in our people—Mr MUFF May I ask if it is blue blood?

The Causes of Silicosis

Mr TOM SMITH asked the Secretary for Mines if he had any information concerning discussions relative to silicosis and its causes mentioned recently by the President of the Institute of Mining and Metallurgy—Captain CROOK SHANK replied I have not yet seen a full report of the President's speech last Thursday, but I understand that it referred particularly to the progress of research into methods of collecting samples of dust from the air breathed by mineworkers, and of examining and analysing such samples My Department is closely in touch with this work through its technical officers

Family Incomes and the Means Test

Mr OLIVER asked the Minister of Labour whether his attention had been drawn to the hardships caused by the inclusion, for the purpose of calculating family incomes in respect of the means test, of lump sums paid to injured workmen by way of compensation under the Workmen's

Compensation Act, and whether, in view of the fact that these commuted sums represented the loss of earning capacity, both present and future, of injured workmen, and were not savings or interest on investments, he would consider discontinuing assessing these settlements for the purposes of relief of unemployment existing in the households of these workmen—Lieut Colonel MUIRHEAD replied I would remind the hon Member that the special nature of these lump sum payments has already been recognised by the Board so that one half is treated as required for the special needs or personal requirements of the holder If the holder is other than the applicant or the applicant's husband, wife, father, or mother, the balance is taken into account only in so far as the actual income derived from it, together with any other available resources, exceeds the amount of the scale rates of the holder and his dependants In other cases the balance of one half is regarded as producing an income of 1s per week for each £25 in excess of the first £25

Day and Night Nursery at Bristol

Mrs TATE asked the Minister of Health (1) whether the Bristol Council proposed that one member of the staff of the Bristol day and night nursery in Ashley road, Bristol, should be a trained nurse, (2) what steps the Bristol Council were taking to ensure that fuller medical records should be kept at the Bristol day and night nursery, and (3) whether arrangements had now been made by the Bristol Council for systematic medical inspection of children in the Bristol day and night nursery—Sir J BLUNDELL, Lord of the Treasury, replied My right hon friend is in communication with the Bristol City Council regarding the three matters referred to and will inform my hon friend of the result

School children and Tuberculosis

Mr GROVES asked the Minister of Health how many cases of tuberculosis had been notified among school children during the last year for which the figures were available, in Chesterfield and in Sheffield, respectively—Sir KINGSLEY WOOD replied 394 fresh cases of tuberculosis were notified among children between the ages of 5 and 15 in Sheffield in 1936, and 7 were notified among children between the same ages in Chesterfield in 1935, the last year for which figures are at present available for that borough

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED
APRIL 17TH, 1937

Notifications—The following cases of infectious disease were notified during the week Small pox, 0, scarlet fever, 1678, diphtheria, 1019, enteric fever, 25, pneumonia (primary or influenzal), 1150, puerperal fever, 33, puerperal pyrexia, 137, cerebro spinal fever, 24, acute poliomyelitis, 8, acute polio encephalitis, 0, encephalitis lethargica, 0, dysentery, 18, ophthalmia neonatorum, 106 No case of cholera, plague, or typhus fever was notified during the week

The number of cases in the Infectious Hospitals of the London County Council on April 23rd was 3196 which included Scarlet fever, 853 diphtheria, 904 measles 39 whooping-cough 512 puerperal fever, 18 mothers (plus 14 babies) encephalitis lethargica 284 poliomyelitis, 1 At St Margaret's Hospital there were 19 babies (plus 5 mothers) with ophthalmia neonatorum

Deaths—In 123 great towns, including London, there was no death from small-pox or from enteric fever, 13 (0) from measles, 3 (0) from scarlet fever, 24 (5) from whooping-cough, 20 (3) from diphtheria, 53 (14) from diarrhoea and enteritis under two years, and 73 (10) from influenza The figures in parentheses are those for London itself

Greater London had one death from enteric fever Eight deaths from measles were reported from Birmingham and 4 deaths from whooping-cough from Manchester There were also 3 deaths from diphtheria at Birmingham

The number of stillbirths notified during the week was 299 (corresponding to a rate of 42 per 1000 total births), including 46 in London

MEDICAL NEWS

University of Oxford

The electors to the Nuffield professorship of obstetrics and gynaecology at Oxford announce the appointment of John Chassem Moir to the post, duties to start on Oct. 1st.

Dr Moir is 37 years of age and was educated at Montrose Academy and Edinburgh University. He graduated in 1932, and in 1938 gained the M.D. degree, his thesis on an obstetrical subject being awarded a gold medal. He is a fellow of the Royal College of Surgeons of Edinburgh and a fellow of the Royal College of Obstetricians and Gynaecologists. After some years' experience of general practice and of general surgery Dr Moir devoted himself to gynaecology and obstetrics. He studied in Vienna and Berlin and later having been awarded a Rockefeller travelling fellowship) in Johns Hopkins Hospital Baltimore, where he held the position of senior research assistant to the obstetrical unit at University College Hospital, London and, in 1935 was appointed reader in obstetrics and gynaecology in the University of London holding office at the new British Postgraduate Medical School. His most known research activity is the human pregnant and non pregnant uterine. This worked to the discovery of a new active principle in ergot and in a later combined investigation with the late Mr W. Dunder M.D. the substance responsible for the active principle was isolated and identified as a previously unknown α -ergometrine.

University of Cambridge

On Monday May 10th at 5 p.m. Prof A V Hill F.R.S will deliver the Linacre lecture. His subject will be the heat production of muscle and nerve.

University of Glasgow

On April 24th the following degrees were conferred—
 M.D.—Annie R. Chalmers, D. K. M. Chalmers, Edgar
 Cochrane J. A. M. Hall D. W. Hender and William Tellor
 (with commendation) B. M. Laird J. E. McNair
 In absentia

M.D. (A.B.) — D. Wright (with honours). I.C. Wilson
 (with commendation). M.O. Alakia. I.A.M. Beaton William
 Begg. S.A. Bond. J.M. Brown Robert Browning Bernard
 Camber. Annie Cameron. D.A. Cannon. Harold Crampton
 J.C. Curran. G.W. Davidson. W.G. Egan. R. Williams
 J.M. Guthrie A.L. Dick Alexander Donald, Marjole Frew.
 O.H. George. W.F. Gilford. A.M. Gilchrist. P.R. Goerl
 M.P. Graham. H.F. Gray. C.A. Hamilton. J.E. Harvie
 D.J. Hart. C. Howie. J.B. Hurll. Alexander Ja.k
 M.I. Kriesher. O.I.D. Lavan. J.C. Little. R.D. Ling John
 Ludlow. J.M. McBride. A.R. McDougall. O. Macintosh
 D.A. McEachern. W. Miller. W. Milne.
 D.N.B. Morrison Kenneth Murray. W. Oman. J.R. Proctor
 A. Rodger. D.C. Russell Joseph Shapiro. Bernard Smith
 N. Strirling. Idd. Stoll Irwin. A. Thomson. J. Timan
 J. Tuck. J. Walker. J. Watt. J. Q. Watson

Royal Faculty of Physicians and Surgeons of
Glasgow

At a meeting of the Faculty held on April 5th with Prof Archibald Young the president in the chair the following were admitted to the fellowship:—

Andrew Girdwood Ferguson and Thomas Ian Hay Gordon
(Glasgow) Donald Valter Marshall (Hull) and Arthur MacLennan
Duthie (Glasgow)

British College of Obstetricians and Gynaecologists

A meeting of the council of the College was held on April 24th with Sir Ewen Maclean the president in the chair. The following were formally admitted to the fellowship:—

(C) Rev. Thos. David Well Brownie (Dunblin) James Robertson
 Campbell, Canons (Cambridge), Robert Henry Joseph Mulhall
 Corbett (Dunblin) *Thoma Frederick Cockill (Wellington)
 New Zealand Herculano Diogo de Sa (Bombay), Charlotte
 Anne Douglas (Edinburgh) Henry Harvey Evans (Newra the
 Upper Tyne) Arthur Oliver Gray (London) Sidney Blash
 H. J. H. (London) H. J. H. (London) (Dunblin) (Dunblin) Andrew
 George MacLellan and William McKim Herbert MacLellan
 (London) George Henry Mahony (Patna) Perry Malpas
 (Liverpool) Maugenda Mehta (Bombay), Douglas Miller
 (Edinburgh) Cyril MacDonald Plimpton (Madras) and Frederick
 Leitch Leitch (London) and Leslie Serpell (London) and
 Leslie Serpell (London) John L. Plimpton (Sheffield) and
 Brian Herbert Swift (A. Ireland)

[illegible]

At the annual general meeting which followed Dr J P Hedley, Prof F E Murray, Prof Gilbert Strachan, Prof

William Gough and Dr D G Madill were elected to the council as representatives of the fellows and Dr J W G H Riddell Mr John Sturrock, and Dr A. W Spain as representatives of the members.

King's College Hospital

The Listerian Society of this hospital will meet there on Wednesday May 5th at 8 15 P.M. when Prof Charles Singer will speak on medicine in early England.

London School of Hygiene and Tropical Medicine

One Fishmongers' Company studentship is awarded annually at the school. It carries remission of fees for the DPH course. Applications to compete for the studentship must be sent to the secretary of the school, Keppel-street WC1 by June 14th. The examination will be held on June 22nd and 23rd.

Glasgow University Club London

This club will dine at the Trocadero Restaurant London W on Friday 28th May at 7.30 p.m. when the principal of the University Sir Hector Hetherington will be in the chair. The Earl of Derby will be the guest of the chair man. The hon. secretaries may be addressed at 62, Harley house London N.W.1

College of Physicians and Surgeons of Bombay

At a meeting held in January the council of the college decided to institute an examination for a diploma in ophthalmic medicine and surgery and appointed a committee to draw up regulations and a syllabus. On March 12th the report of this committee was adopted and the first examination for the diploma will be held in July. Copies of the regulations may be had from the secretary of the college.

The Factories Bill

The Council of the Save the Children Fund while welcoming the Factories Bill now before Parliament has passed a resolution urging its amendment so as to ensure that no child shall be employed in a factory before the age of 15; that no child or young person shall be permitted to work more than 40 hours a week; that no overtime be permitted for workers under 18 years of age; that holidays with pay be assured to all children and young persons; that the hour of leaving work may be sufficiently early to enable children and young persons to take advantage of available opportunities for education and recreation; and that the clause providing that the Home Secretary may suspend Part II of the Bill (dealing with safety) until 1910 be eliminated.

London County Council

A meeting of the Council on April 27th received proposals for a new antitoxin establishment at a site which is available at Queen Mary's Hospital, Carmichael. The accommodation at the existing antitoxin establishment at Belmont Station is still inadequate despite the alterations and additions which have been carried out from time to time and twice the existing space is required. The proposed new establishment which will cost about £116,000 will ensure a constant and ample supply for the Council's hospitals of products which are made at Belmont and also of others which are now being purchased. There will also be extra facilities for research work. The laboratory at Belmont will be retained for work which can conveniently be carried out there.

Other Improvements which are to be carried out at the Council's hospitals include the construction of two new isolation blocks each containing 60 single bed wards at the Southern Hospital. A new nurses home will also be provided and the existing accommodation for the nursing staff will be altered. The total estimated cost of these extensions is about £61,300. A new sanitary annex is to be provided at St George in the East Hospital and the sanitary annexes at Archway Hospital are to be remodelled and extended. A new operating theatre is to be added at St. Charles Hospital at a cost of about £2,000.

Dame Janet Campbell has been appointed a member of the hospitals and medical services committee of the Council.

Schorstein Research Fellowship in Medical Science, 1937

The Board of the Faculty of Medicine at Oxford will make an election to the above Fellowship in June, 1937, if a candidate of sufficient merit presents himself. The fellowship, which will be of the value of £300, will be tenable for one year from Oct. 1st, 1937, in any medical department or institute at Oxford, under such regulations as the Board may approve. Candidates must be graduate members of the University, holding a registrable medical qualification, and must be under thirty-five years of age on Oct. 1st, 1937. Candidates must submit their applications to the dean of the medical school, University Museum, not later than Monday, May 3rd, 1937. Each candidate must submit (1) evidence of age, (2) testimonials (three copies) or names of referees, (3) a statement of his career, (4) a statement of the department of medical science in which he proposes to research.

The British Social Hygiene Council

There is a real need for further subscriptions to the British Social Hygiene Council if its valuable work is to be continued in its present practical way. The B.B.C. will consequently afford the Council an opportunity of making a public appeal. This will be done on Sunday, May 2nd at 8.45 P.M., Prof. John Hilton making the appeal. In a second direction the Council is seeking public support by holding an Empire Ball on July 6th. The Ball will take place at Grosvenor House and an important number of patrons have already been secured. There will be a cabaret and various competitions for prizes, the tickets for the Ball are £2 2s each, or £10 10s for six, and it is hoped that visitors from overseas will support the entertainment. The tickets are obtainable from Grosvenor House, Park Lane, The Ball Committee, Carteret House, Carteret Street, Westminster, S.W.1, and the Over Seas League, Park Place, St. James's, S.W.1.

Incorporated Society of Chiropodists

The annual dinner was held at the Trocadero, London, on April 24th. The toast of the medical profession was proposed by Mr. Charles Doughty, K.C. Sir Frederick Menzies, F.R.C.P., in response, said that medical science was developing more and more in the direction of team work, one of the remarkable developments was the formation of groups of non-medical workers, without whom the efficient work of a hospital could not be done, radio-graphers, dieticians, electric therapists, masseurs, and so on. One of these days the work in which chiropodists were engaged must also become an essential unit of any hospital service. Thousands of people were going about the country suffering acutely from conditions of the feet which could be remedied by chiropodists who had an enormous sphere of work. So long as the members of the Incorporated Society of Chiropodists rigidly adhered to the high standards they had set themselves, they were bound to succeed in their aims. He looked to the greatest possible co-operation between them and the medical profession in the interests of the community. Mr. A. Simpson Smith, F.R.C.S., proposed the toast of "this most progressive society." Chiropody, he said, was assuming greater importance year by year and had long eclipsed the mere cure of the corn. Chiropody was rapidly becoming of national importance, particularly as every week something like 135 people were killed and 5000 injured on the road largely through not being quick enough on their feet. He foresaw that in the national scheme of physical fitness, that is about to be launched, there would be proper provision for the many C3 feet which were the increasing outcome of arduous occupations in industry. One could not have an A1 nation with C3 feet. Mr. John H. Hanby, F.I.S.Ch., responded from the chair. They had, he said, recently secured the co-operation of the Royal College of Surgeons with regard to their examinations and had every hope that the Royal College of Physicians would co-operate in a similar manner by confirming a recommendation made by a joint committee of both colleges thus strengthening the confidence which had been placed in them both collectively and individually by various public bodies such as general hospitals and infirmaries where so large a number of their members held appointments. Certain authorities, hospitals and other

institutions throughout the country had realised the importance of chiropodial treatment, and last year 120,000 treatments were given in the five foot hospitals with which the society was associated. But all these were merely touching the fringe of this vital problem. The only way of dealing adequately with this important question was to make chiropody available as a panel benefit under the National Health Insurance, thus giving 15,000,000 people the opportunity to improve their general physical condition.

Royal Society of Medicine

This society's house and library will be closed from Wednesday, May 12th, to Tuesday, May 18th, both days inclusive.

International Congress on Occupational Diseases and Industrial Welfare

The *Journées Internationales de Pathologie et d'Organisation du Travail* will be held in Paris from June 1st to 6th under the presidency of V. Balthazard, professor of forensic medicine in the University of Paris. Further information may be had from the secretary general of the congress, Dr. G. Hausser, *Institute Médico-Légal*, Place Mazas, Paris XII.

Travelling Fellowships in Medicine

The Medical Research Council invite applications for six Rockefeller medical fellowships for the academic year 1937-38. These are provided from a fund with which the council have been entrusted by the Rockefeller Foundation of New York. They are intended for British graduates who have had some training in research work in clinical medicine or surgery, or in some other branch of medical science, and who are likely to profit by a period of work at a centre in the United States or elsewhere abroad, before taking up positions for higher teaching or research in the United Kingdom. The stipend will ordinarily be at the rate of £400 per annum for a single fellow, and of £450 per annum for a married fellow. Travelling expenses and some other allowances will be paid in addition.

The Council also invite applications for four Dorothy Temple Cross research fellowships in tuberculosis. The object of these fellowships is to give special opportunities for study or research to suitably qualified British subjects of either sex "intending to devote themselves to the advancement by teaching or research of curative or preventive treatment of tuberculosis in all or any of its forms." The stipend will ordinarily be fixed at the rate of £400 per annum, with travelling expenses in addition.

Applications for these fellowships must be sent to the Council not later than June 1st. Further particulars may be had from the secretary of the Council, 38, Old Queen Street, London, S.W.1.

Fellowship of Medicine and Post-Graduate Medical Association

The following courses will be given during May and early June: dermatology at St. John's Hospital (afternoons, May 3rd to 29th), thoracic surgery at the Brompton Hospital (all-day, May 24th to 29th), urology at St. Peter's Hospital (all day, May 31st to June 12th), gynaecology at the Chelsea Hospital for Women (June 14th to 26th). Week-end courses will be held in chest diseases at the Brompton Hospital (May 8th and 9th), in physical medicine at the St. John Clinic and Institute of Physical Medicine (May 22nd and 23rd), in children's diseases at the Princess Elizabeth of York Hospital (May 29th and 30th), in general medicine at the Prince of Wales Hospital (June 5th and 6th), in obstetrics at the City of London Maternity Hospital (June 12th and 13th). During June, for M.R.C.P. candidates, there will be a clinical and pathological course at the National Temperance Hospital (8 P.M., Tuesdays and Thursdays, June 1st to 17th), a course in chest diseases at the Brompton Hospital (twice weekly, 5 P.M., June 7th to July 3rd), a course in heart and lung diseases at the Victoria Park Hospital (Wednesdays and Fridays, 6 P.M., June 9th to July 3rd) and an afternoon course in neurology at the West End Hospital for Nervous Diseases (June 21st to July 3rd). The annual dinner-dance of the fellowship will take place at Claridge's Hotel on Friday, May 28th, tickets can be obtained from the secretary of the fellowship at 1 Wimpole Street, London, W.1, by any member of the medical profession.

Colchester Essex County Hosp.—H P, £150
 Connaught Hosp Walthamstow E—Cas O, at rate of £100
 Coventry and Warwickshire Hosp—Res Cas O £125
 Croydon County Borough—Asst. M O H and Asst. School M O, £500 Also Deputy M O H and Deputy School M O £720
 Dorchester Dorset County Hosp—H S, at rate of £150
 Dudley, Guest Hosp—Second H S £120
 East Ham Memorial Hosp, Shrewsbury road, E—H S to Spec Depts and Cas O, at rate of £120
 Hampstead General and North West London Hosp Haverstock hill N W—Cas M O and Cas Surg O for Out patient Dept, each at rate of £100
 Hosp for Tropical Diseases 25, Gordon street, W C—Hon Asst Physician Also Pathologist £750
 Hove General Hosp—Sen and Jun Res M O s £150 and £120 respectively
 Hull Royal Infirmary—Second Cas O, at rate of £150
 Iford King George Hosp—Hon Chief Asst to Orthopaedic and Fracture Dept, Res Surg O and Med. Reg, £250 and £150 respectively Also two H S's each at rate of £100
 Kettering and District General Hosp—Res M O and Second Res M O, £160 and £140 respectively
 Larbert, Stirling District Mental Hosp—Third Asst M O, £250
 Leeds General Infirmary—Hon Physician
 Leicester City Mental Hosp, Humberstone.—Locum Tenens Asst M O, 10 guineas per week
 Lincoln County Hosp—Jun H S, at rate of £150
 London County Council—Asst M O, £470 Asst M O s Grade II, £250 Also Temp District M O, £250
 London Jewish Hosp, Stepney Green, E—Res M O and H P, at rate of £150 Also Res H S and Res Cas O, each at rate of £100
 Maidstone West Kent General Hosp—H S £175
 Manchester City Education Committee—Psychiatrist, £500
 Market Drayton Cheshire Joint Sanatorium—Resident Locum 8 gns per week
 Middlesbrough North Riding Infirmary—Cas O at rate of £150
 Middlessex Hosp W—Jun M O for Radio therapy Dept and Asst for Dept of Physical Medicine each £300
 Northamptonshire County Council—Temp Asst County M O H, £500
 Northwood Mount Vernon Hosp—Clin Pathologist £500
 Norwich, Norfolk and Norwich Hosp—Res Surg O £250
 Nottingham General Hosp—H S for Ear Nose and Throat Dept and Res Cas O, each at rate of £150
 Oldham Municipal Hosp—Res Asst M O, at rate of £200
 Oxford Eye Hosp, Walton street—H S to Ophthalmic Dept £150
 Plymouth Prince of Wales Hosp—H S, at rate of £120
 Preston County Mental Hosp, Whittingham—Res Jun Asst M O, £500
 Presdon, Sharoe Green Hosp—Med. Supt £850
 Princess Louise Kensington Hosp for Children St Quintin avenue, W—Hon Ophth Surgeon Also H S, at rate of £120-£150
 Queens Hosp for Children Hackney road, E—H S at rate of £100
 Radium Institute, Riding House street, W—Res M O at rate of £250
 Reading Royal Berkshire Hosp—Cas O and H S to Spec Depts each at rate of £150
 Royal Cancer Hosp Fulham road, S W—H S at rate of £100 Also H S to Radium Dept, at rate of £200
 Royal Free Hosp Gray's Inn road W C—Asst Physician
 Royal London Ophthalmic Hosp City road, E C—Out-patient Officer £100
 Royal Naval Medical Service—M O's
 Royal Northern Hosp Holloway N—H P and H S each at rate of £70
 Royal Waterloo Hosp for Children and Women, Waterloo road S E—Res Cas O for Out-patient Dept at rate of £150
 St Bartholomew's Hosp E C—Asst. Aural Surgeon
 St Helens County Borough—Asst M O H £500
 St Pancras Metropolitan Borough—Asst Welfare M O, 14 guineas per session
 Salford City—Asst Maternity and Child Welfare M O, £250
 Salisbury General Infirmary—H P, at rate of £125 Also Res M O £250
 Salvation Army Mothers Hosp, Lower Clapton road E—Two Jun Res M O's, each £80
 Shrewsbury, Royal Salop Infirmary—Res H S at rate of £160
 Simla Medical Council of India—Secretary Rs 1200-75-1500
 Southampton Royal South Hants and Southampton Hosp—Sen H S £200 HP H S Res Anaesthetist and H S &c., and Cas O, each at rate of £150
 Stockton on Tees Durham County Mental Hosp Winterton—Locum Tenens Asst M O 1 guinea per day
 Stoke-on-Trent Burslem Haywood and Tunstall War Memorial Hosp—Res H S at rate of £175
 Swansea General and Eye Hosp—Cas O at rate of £150-£175
 Tunbridge Wells Kent and Sussex Hosp—H S £150
 University of London—University Chair of Bacteriology £1000
 Uxbridge Hillingdon County Hosp—Jun Res Asst M O at rate of £250
 Wallasey Victoria Central Hosp—Jun H S £150
 West Ham County Borough—M O H and School M O £1500
 West Suffolk County Council—Asst County M O and Asst School M O, £500
 Wickford Runcell Hosp for Nervous and Mental Disorders—H P at rate of £150
 Wolverhampton New Cross Hosp—Res Asst M O £200
 Worcesterhampton Royal Hosp—H S s, at rate of £100
 Wootrich and District War Memorial Hosp Shooters hill S E—Three Hon Anaesthetists
 Worthing Hosp—H S at rate of £130

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Pewsey (Wilts) and Redcar (Yorks N R)

Appointments

BLAIR BRYCE, M B Lond, Resident Assistant Medical Officer at the Epsom County Hospital
 CHISHOLM, W N M B, F.R.C.S Edin D C O G Resident Medical Superintendent at Park Hospital Daryboline near Manchester
 GORROD C E, M B Aberd, Assistant Medical Officer at King George's Sanatorium for Sailors Bramshott
 ODLUM DORIS M R O S Eng D P M, Hon Psychiatrist to the Psychiatric Department of the Elizabeth Garrett Anderson Hospital and Hon Senior Psychiatrist to the Department for Nervous Disorders of the Royal Victoria and West Hants Hospital, Bournemouth
 ROBINSON G L M B Camb Research Worker in Rheumatic Diseases at the Devonshire Royal Hospital Buxton
 TIERNEY J A, M B Glasg Assistant Medical Officer at the Royal Eastern Counties Institution, Colchester
 London County Council Hospital Staff—The following appointments, promotions and transfers are announced A M O (I) and (II)—Assistant Medical Officer, Grades I or II Temp—temporary Mod Sup—Medical Superintendent MARTIN, F R, M D Glasg D P M Temp Visiting M O (part-time) Sutton Training Centre
 OSBORNE J W M B Syd M R O P Lond, A M O (I) St Mary Abbots
 MAIZELS GERALD, M B Manch M C O G A M O (I), Dulwich
 LEONARD, F R, M B N Z, F R C S Eng A M O (I) St Algea's
 HOTSON, CHRISTOPHER, M B, F R C S Edin, A M O (I), Lambeth
 BRADLEY D J M B Dubl A M O (I) Queen Mary's Carshalton
 KAY, ELIZABETH B M B Glasg, A M O (I) Queen Mary's Carshalton
 NEVIN MARY E M B Belf, A M O (II), White Oak
 SMELLIE ELSPETH W, B M Oxon, A M O (II), Queen Mary's Carshalton
 VICKERS KATHLEEN M N, L R O S Irel L M, A M O (II) Norwood Children's
 PALMER E A E, M B Camb D A, A M O (II) St Andrew's
 MITCHELL EVELYN E M B Edin A M O (II), St Giles
 ROGERS KATHARINE C, M R C S Eng, A M O (II) St Giles
 MAYEUR, MARY H M D Lond A M O (II) St James
 BAKER HARRY, M B Manch A M O (II) Bethnal Green
 SMITH, T M M B N Z A M O (II) Bethnal Green
 DOWLING, P G M B Melb A M O (II) Lambeth
 BELL, A L W, M R C S Eng A M O (II) Queen Mary's, Sidcup
 BLAIR, E J M D Durh A M O (II), St Mary, Islington
 ROGERS GEOFFREY, M R C S Eng, A M O (II) St Peter's
 GUNN WILLIAM, M B Aberd M R O P Lond, D P H Med Sup North Western
 MILLOY J McN M B Glasg, F R C S Eng Med Sup Archway
 WEST H O M D, F R C P Lond D P H Med Sup, Queen Mary's Carshalton
 HENDERSON R G, M D Aberd, D P H Divisional Medical Officer Central Administrative Staff
 AIKEY J P M B N U I Deputy Med. Sup I Dulwich
 EVANS J C M R C P Lond, Deputy Med. Sup II Bethnal Green
 WILKIE DAVID M D Edin F R C S Eng, Senior A M O (I) St Pancras
 LEWIS LLOYD, R A V, M B Lond., D P H, Senior A M O (I) St Nicholas
 WILKIE ALFRED M B Aberd Senior A M O (II), Heather wood
 HILL R A M B Lond, F R C S Edin Senior A M O (II) St Charles
 THOMAS R G M B Lond F R C S Edin, A M O (II) St George in the East
 DEWAR, A F R, M D Glasg A M O (II) St Stephens, s
 ARTHUR J B M B Edin A M O (I) Bethnal Green,
 BOYLE A K M B Glasg A M O (I) St Peter's
 FRASER T A M D Aberd A M O (I) Ville End
 MELTON GEORGE M D, M R C P Lond A M O (I) Lewisham
 SAVAGE O A, M R C S Eng A M O (I), Grove,
 HOGARTH J C, M B Glasg A M O (I) Eastern
 CLARK D C M B Lond A M O (II) St Mary Islington
 PRICE ISAAC, M B Lond, F R C S Eng, Deputy Med Sup (II) St Andrew's
 MOOR, ELIZABETH M M B Belf, Senior A M O (II), Ville End
 GRIFFIN, T F R M B Lond F R C S Eng A M O (I) Bethnal Green
 NICHOL R W B A, M R C S Eng A M O (I) St Charles,
 BYRNE P A M B N U I, A M O (II) Lambeth and
 COVENTRY MARGARET F M B Sheff D P H, A M O (I) White Oak

Certifying Surgeons under the Factory and Workshop Acts
 Dr A F JAMES (Caine Wiltshire) Dr C J FAIRLIE (Blyth, Northumberland) Dr J D B VAILL (Chertsey, Surrey) Dr C S LEWIS (Staveley Derbyshire) and Dr G W SCOTT (Malvern Worcester)

WORCESTER ROYAL INFIRMARY—Lady Atkins, mayor of Worcester was on April 19th elected chairman of this hospital

NOTES, COMMENTS, AND ABSTRACTS

THE MATERNAL MORTALITY REPORT

For two years medical officers of the Ministry of Health have been making a special investigation of maternal mortality and morbidity. Their long awaited report is published as we go to press.

The task before them was to discover why the puerperal mortality rate has not fallen despite increased interest taken in maternal welfare extension of maternity services and improvement in the general health.

FACTORS IN CAUSATION

Dealing with the regional distribution they point out that for many years puerperal mortality has been higher in Wales and the north west of England than in the country as a whole. This regional inequality is however not confined to maternal mortality rates with certain exceptions the distribution of the general death rates infant mortality rates tuberculosis and other rates show some correspondence with the rates from puerperal causes.

Various factors possibly responsible were considered. The available evidence shows it is reported that districts in which there are areas with *bad housing and overcrowding* are just as likely to have low rates of puerperal mortality as those in which the housing is good and the overcrowding less. In the districts visited it was not generally found that the puerperal mortality rates were higher in the areas with most overcrowding. Nor did these show any consistent association with corresponding variations in economic conditions. The influence of the nature of the diet and of nutrition on maternal mortality cannot it is observed, be accurately assessed in the present state of knowledge. The tendency for the mortality rates to be higher in the north and west and lower in the south and east of the country suggested that climatic conditions might in part exert an influence but the data required to demonstrate the association are not complete. Again it was found that deaths from puerperal sepsis tended to occur most frequently in the coldest quarter of the year that being the quarter which immediately succeeds the wettest and moistest quarter while deaths from toxæmia tend to occur in the warmest quarter. But the significance of this association cannot yet be assessed.

The information obtained by the investigators suggests that the practice of artificially induced abortion is frequent appears to be increasing is more prevalent in some districts than in others and is not restricted to any one social class. Approximately 14 per cent of all puerperal deaths are due to this cause (excluding deaths from abortion classed as criminal). The risk attending artificially induced abortion does not appear to be sufficiently realised and there is urgent need for the education of women respecting the damage to health and the danger to life from attempts to terminate pregnancy artificially. The facilities available in some areas for the in patient treatment of cases of abortion under expert supervision are inadequate.

THE MATERNITY SERVICE AND THE PRACTITIONER

Local investigation of maternal deaths indicates that ignorance or lack of co-operation on the part of the patient or her relatives often prejudiced her chance of recovery and illustrated the need for more systematic and careful medical supervision during the antenatal period more skilful management of some confinements more frequent reference of cases of doubt or difficulty for the advice and treatment of

an expert obstetrician and earlier admission to hospital of many patients. The primary conclusions of the investigators are that (1) those general practitioners who undertake obstetric work should be interested experienced and actively engaged in the practice of midwifery have sufficient time for unhurried work and be prepared to co-operate with the appropriate members of the local public health department and with the other agents concerned with the promotion of maternal welfare in the district. (2) The services of obstetric experts should be readily accessible in every area. (3) Everything possible should be done not only to induce expectant mothers to avail themselves of the facilities provided for them but also to impress upon them the importance of accepting and acting upon the advice proffered.

The report contains an outline of an efficient maternity service of a local authority and includes subjects recommended for consideration in order to render the services more fully effective. It is pointed out that the underlying principles of antenatal care are sound but that optimal results cannot be expected until antenatal supervision attains a high general standard and expectant mothers make full and intelligent use of it. The development of consultative antenatal clinic sessions under the clinical supervision of an expert obstetrician to serve every area is of importance in order to render antenatal services more efficient.

The report refers to the decrease in domiciliary confinements conducted by general practitioners the increase in those for which midwives are responsible and the rapid and increasing development of institutional midwifery in many districts. The investigation showed that many medical practitioners under take a considerable amount of obstetric work with competence and skill. The midwifery practice of some doctors has however decreased and the position in some towns is that unless a general practitioner has a special interest in midwifery or is of repute for his obstetric skill his maternity practice may be largely restricted to a few medical aid calls from midwives in the course of a year. The general practitioner is often called to an emergency in the patient's home and may have to cope without adequate assistance and in unfavourable surroundings, with critical situations which would challenge the skill of an obstetric specialist. Other calls upon his time may be pressing. Moreover the condition of the patient may be such as to compel him to take immediate action however disadvantageous the circumstances may be. The histories of many of the maternal deaths investigated indicated that notwithstanding these handicaps careful obstetric procedures were adopted but others showed that the woman's chance of recovery would often have been enhanced had a practitioner experienced in midwifery been in attendance had the doctor been assisted by an obstetric expert or had the patient been admitted to hospital sufficiently early.

The investigators consider that a doctor whose practice of midwifery is restricted to only a few cases each year cannot be expected to assist the midwife in difficulties which may urgently call for judgment and experience which in the circumstances he cannot be expected to possess. They suggest that the local supervising authority in consultation with the local medical profession should in future be empowered to take steps to ensure that the best local obstetric skill is made available in all cases.

in which midwives are required under the rules of the Central Midwives Board to call in a doctor. Reference is also made to the need for specialist advice, and facilities for in-patient treatment, after confinement.

Much stress is laid on the value of a service of obstetric consultants, and attention is drawn to the infrequency with which the consultant facilities were utilised in some areas where they had been provided. The provision of so-called emergency units or "flying squads" in connexion with a maternity department, under the direction of an expert obstetrician, should help to reduce maternal mortality.

In the opinion of the investigators it is essential to the success of a maternity scheme that there should be co-operation between all those concerned, and, although this was a satisfactory feature in a few of the areas visited, in others its importance had not been recognised. The time for independent individual effort, they believe, is past. All persons engaged in any branch of a maternity service should consider themselves to be members of a team working towards the goal of safer motherhood. It is in this way and this way alone that effective continuity of supervision and treatment can be secured.

While there are many factors which influence maternal mortality, it is clear at least, says the report, that it is capable of reduction, and of the factors known to influence it the most important from the point of view of remedial action is the standard of midwifery practice.

THE "BONCHORD" HEARING-AID

A NEW valve amplifier hearing aid has been submitted to us by Messrs Allen and Hanburys. The model examined, M V 36, is assembled in a neat case measuring $6 \times 3\frac{1}{2} \times 3$ inches, and employs two stages of amplification, a small 36-volt dry battery and a 2-volt chargeable accumulator. The microphone is of the immersed electrode type, and a volume control is incorporated in the switch, in addition an automatic volume control is provided, which ensures that the ear will not be damaged by accidental loud noises. Tone control is obtained by the use of earpieces of various impedance, or by the employment of electrical filters. The price is 16 guineas, which includes a spare accumulator. The dry battery is said to have a life of about three months, and the accumulator to give 25 hours' use before recharging. A larger and more powerful model, M V 52, is obtainable, with three valves, at a cost of 18 guineas. A piezo-electric crystal microphone can be fitted to either model at an additional cost of 2 guineas, this is practically free from background noise and is particularly suitable for sufferers from tinnitus and for cases of senile deafness. We think that this microphone will be advisable in most cases, as background noise is considerable in valve aids which are capable of a very high degree of amplification.

THE WHOLESOMENESS OF CANNED FOODS—A circular written by Mr H B Cronshaw, Ph D, entitled "The Wholesomeness of Canned Foods," has been issued under the auspices of the International Tin Research and Development Council. The pamphlet contains a brief account of the history of canning and describes the premises and processes used for the purpose. The safety of canned foods as regards both chemical and bacterial contamination is emphasised and a brief review is given of recent work on the effect of heat as applied in canning processes, and on the nutritive value of foods (including vitamins). The statements are moderate and accurate so far as the best British factories are concerned.

Births, Marriages, and Deaths

BIRTHS

CRAIG—On April 22nd at Fulbourn street E the wife of Dr Norman S Craig of a son
DUNLOP—On April 18th, at Tebbury Glos the wife of Dr J Leeper Dunlop of a daughter
JENKINS—On April 20th the wife of Dr R D Jenkins of Almondsbury of a son
LYLE—On April 16th the wife of Dr Eric Lyle Bromley of a son
PRICE—On April 21st, the wife of Roy Kemball Price M D, of Brighton of a daughter
REED—On April 10th at Batu Gajah, FMS the wife of Dr J G Reed of a son
SMALLSHAW—On April 20th at Epsom Downs, the wife of Dr D B Smallshaw of a son
STEWART—On April 17th at Edinburgh the wife of Dr James Stewart 33 Hutton place Edinburgh of a daughter
THWAITES—On April 20th, at Caterham the wife of Dr P Thwaites, of Whyteleafe of a daughter

MARRIAGES

LANCASHIRE—GOODFELLOW—On April 17th at Bermuda Roger William George Lancashire Surg Lt R N to Christina Sophia, daughter of Dr and Mrs T A Goodfellow, West Didsbury Manchester
MACLEAN—LOVE—On April 15th, at Burton-on-Trent Nell MacIntosh MacLean M B Glasg of Doncaster to Gwyneth Duncan Love M B Edin, of Tunbridge Wells
SAVILLE PECK—JOHNSON—On April 20th at Madingley Cambridge, John Portway Saville Peck M B Camb, to Nora Eugene, daughter of the Rev M Johnson, of Farway Devon
WHITEHEAD—CHAPMAN—On April 8th, 1937, at St Paul's Church, Mill Hill James Edward, son of the late John Kay Whitehead of Royston Lanes, and Mrs Whitehead to Marjorie Beatrice, younger daughter of Charles W Chapman, M D, M R C P and Mrs Chapman of Highwood Coombe, Mill Hill N W 7

DEATHS

ANDERSON—On April 19th at Erdington Birmingham Robert Anderson B Chir Camb, Captain R A M C (T), aged 33
HAIG—On April 22nd, at Woking, Francis Murray Haig M D Camb
HINE—On April 26th at Slapton, Devon, Thomas Guy Macaulay Hine O B E, M A, M D Camb, Hon Major R A M C aged 66
HUNTER—On April 18th at Haughley, Suffolk G H Hunter M R C S D P H aged 79
MUDD—On April 21st at Illovo Johannesburg Frank Burnard Mudd, M R C S, younger son of the late Dr Barrington R Mudd, of Storrington Sussex
PHILIP—On the 23rd April at 45, Charlotte square Edinburgh Elizabeth wife of Sir Robert Philip M D, F R C P (Please no flowers)
WALDY—On April 25th at Darlington C Durham, John Waldy F R C S Eng aged 76
WIDDUP—On April 23rd at Southsea the home of his daughter (Mrs Nora Blackwood) John Charles Ponsonby Widdup late Colonial Medical Service
YARR—On April 24th in London Major General Sir (Michael) Thomas Yarr K C M G C B, late R A M C, of Queen Anne's Mansions St James's

N B—A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

UNWANTED INDICES to "THE LANCET"—Any reader who has an unbound copy not in use of the index for 1935 (Vol I) and 1936 (Vol I) would greatly oblige by posting the same to the Editor of THE LANCET, 7, Adam street, Adelphi, London, W C 2

ST BARTHOLOMEW'S HOSPITAL—Overseas visitors are to be given the opportunity of "viewing" the old Priory Church and ancient hospital of St Bartholomew's. Conducted tours have been arranged from May 7th to 14th (excluding Sunday and Coronation Day) at 11 A M and 2.30 P M each day. There will also be an exhibition in the great hall of the treasures of the hospital of drugs obtained from the Empire, a collection of historical pathological specimens and many first editions of well known medical works. The exhibition will be open from 11 A M to 5.30 P M daily. There will be short talks on the Hogarth painting at 4.30 each afternoon. Further information may be had from the hospital.

ADDRESSES AND ORIGINAL ARTICLES

THE PREVENTION OF PULMONARY TUBERCULOSIS AMONG ADULTS IN ENGLAND IN THE PAST AND IN THE FUTURE*

By P. M. D. ARCY HART, M.D. Camb. F.R.C.P. Lond.

ASSISTANT PHYSICIAN TO UNIVERSITY COLLEGE
HOSPITAL, LONDON

(Concluded from p. 1025)

At the beginning of these lectures I adopted a wide use of the term prevention as applied to pulmonary tuberculosis and included within it the prevention of further advance of progressive lesions after their presence has been recognised. The likelihood of this being achieved in a particular instance is intimately connected with the prognosis of the case. One of the objects of the anti-tuberculosis measures embodied in the national tuberculosis scheme has been to improve this prognosis.

The ratios of new cases to deaths published annually by the Ministry of Health (e.g. 1935a) give a rough indication of changes in the average prognosis of diagnosed cases of pulmonary tuberculosis over the past two decades and so enable us to judge approximately the success of this endeavour. Unfortunately these ratios actually decreased between 1913 and 1922 and changed but little between 1923 and 1935 these being comparable years. While a number of minor factors affect their significance, it would be difficult in view of their failure to increase to assert that average prognosis has improved materially. In other words a decline in incidence of new cases rather than an improvement in their prognosis appears to have been mainly responsible for the decline in mortality. This view is supported by the conclusions of Hartley Wingfield and Burrows (1935) based on the records of the Brompton Hospital Sanatorium. Frimley that the prognosis of an average case of pulmonary tuberculosis has not materially changed during the past thirty years though that of a small selected class treated by collapse therapy has considerably improved.

It follows that unless we are to rely upon general social improvements and protection from contacts to continue the reduction in incidence of pulmonary tuberculosis we shall be faced with the serious problem of how to improve the prognosis. Such improvement might be achieved by earlier diagnosis, better treatment and better after-care—the last of these having already been discussed.

EARLIER DIAGNOSIS AS A MEANS OF IMPROVING PROGNOSIS

That there is room for earlier diagnosis is generally agreed.

Of 32,000 patients discharged from or dying in, approved residential institutions in England and Wales during the year 1935-36 per cent were classified at the time of admission as belonging to Class *T B* plus Groups 2 or 3 (intermediate or advanced); this figure if anything underestimates the position since Class *T B* minus is not also subdivided into groups. The total number of Class *T B* plus cases was 23,000, all of which must have been infective and diagnosable for an unknown period and of these only 12 per cent were classified in Group 1 (early or

slight) the remaining 88 per cent being already in an intermediate or advanced stage (Ministry of Health 1936 1935d).

It is also believed that an increase in the proportion of persons diagnosed in the slight or early stages would be of great benefit. This view is founded upon two pieces of evidence. One is that recognition and treatment is an actual advantage. This may appear obvious from clinical experience but its statistical demonstration is not easy (see MacNalty 1932c) and has only lately been achieved with any degree of certainty (Hartley Wingfield and Burrows 1935). The other piece of evidence is that whatever the particular form of treatment the prognosis is closely related to the extent of lung involvement at the time of diagnosis.

Thus Trail and Stockman (1931) in their follow up of patients of Mithurst sanatorium found that the survival rate of early sputum positive cases five years after admission was twice that of advanced cases. In his analysis of the ultimate results of sanatorium treatment MacNalty (1932b) concludes that a patient's chance of survival is enormously increased in proportion as he is admitted to sanatorium treatment in the early stage of his disease. The London County Council (e.g. 1933b) consistently reports similar findings as to survival and fitness for work among its patients five years after residential treatment. Bentley (1935b) in his analysis of the pneumothorax cases of the L.C.C. since 1922, stresses the greater likelihood of finding unilateral disease and obtaining complete collapse (on which two factors prognosis largely depends) where the disease has not progressed for long. And Hartley Wingfield and Burrows (1935) in their study of the after histories of Frimley patients conclude that the mortality in their series depended almost entirely upon the classified stage of the disease at the time of entry and was relatively unaffected by sex or age while the finding of a strong relationship between radiographic extent of the disease and the prognosis provided similar evidence from a different angle.

The apparent lack of improvement in average prognosis in the past twenty or thirty years together with the fact that prognosis is related to the stage at which the disease is recognised suggests that the proportion of cases diagnosed in the slighter or earlier stages has not materially increased during this period. Direct comparison is difficult because of changes in personnel and point of view but the following figures are of interest.

They are obtained from a county whose local tuberculosis scheme is unsurpassed in efficiency and for better comparison the analysis is confined to sputum-positive cases. In the triennium 1920-28 there were 294 new sputum positive cases and in the triennium 1933-35 this total was 2234. The percentage of these cases classified as belonging to Group 1 and Group 3 respectively was 13.5 and 27 in the earlier triennium and 12 and 21 in the later triennium (Lancashire 1927 1928 1933 1934 1935a).

While the interval is short these figures taken at their face-value show little sign of earlier diagnosis under the best conditions of present practice.

It is clear therefore that diagnosis remains unsatisfactorily late and that every effort should be made to advance it so as to improve prognosis.

BETTER TREATMENT AS A MEAN OF IMPROVING PROGNOSIS

The extent to which modern methods of treatment improve prognosis may be gauged from recent

* A similar lack of increase in the proportion diagnosed as minimal tuberculosis (American Association of Tuberculosis 1935) for the clinics operated by the health department of New York City during 1933-36 (Edwards 1937).

reports from institutions, including Midhurst sanatorium (Trail and Stockman 1932, Trail 1934), Frimley sanatorium (Hartley, Wingfield, and Burrows 1935), and the LCC sanatoria (Bentley 1936b). It appears that the proportion of cases found suitable for pneumothorax treatment is relatively small (10 per cent in the LCC service). The chance of survival in all cases undertaken, considered together, is materially improved (by 20 per cent at five years, in the LCC series) by such treatment, the best results being obtained in those whose lesions are strictly unilateral and in which complete collapse is secured (accounting only for a quarter of the LCC cases undertaken). This suggests that pneumothorax treatment has improved prognosis in a small selected category of cases, though it has not yet made a significant impression on the prognosis of the average tuberculous case. In the future the technique of other methods of collapse will probably improve and their range will widen, but this is less obviously likely with pneumothorax treatment. Its effect on average prognosis is likely to remain small and limited (4 per cent increased chance of survival at five years, according to Bentley's estimate), *unless the proportion of suitable cases increases*. Since suitable cases and slight or early cases are in the main synonymous, the future usefulness of pneumothorax treatment on tuberculous patients *as a whole* appears to turn on more frequent diagnosis in the early stages. Such earlier diagnosis would be doubly useful since it should also help to eliminate potential or actual sources of infection for others.

Methods of Obtaining Early Diagnosis in the Past

What methods have been used to obtain early diagnosis? Why have they been a comparative failure? Is extension of these older methods, or the introduction of fresh ones, desirable to ensure better success?

CONSULTANT SERVICE

Until recently it was usual to date the onset of tuberculous disease in adults from the appearance of symptoms or physical signs. The consultant service of the dispensary system of the national tuberculosis scheme was based on this conception. To the patient has been left the initiative of obtaining the first medical interview. A "case" of pulmonary tuberculosis has therefore meant a case with symptoms or physical signs as well as radiographic abnormalities, and attempts at earlier diagnosis have been directed to shortening the interval between the development of symptoms that attracts the attention of the patient, and the recognition of progressive lesions.

Delay in diagnosis after the appearance of symptoms—For purposes of discussion the interval between symptoms and diagnosis can be divided into two parts. (1) the patient has symptoms but has not yet sought medical advice, (2) he is under medical observation but his condition has not yet been diagnosed as pulmonary tuberculosis.

A common reason for delay in seeking medical advice is the hope of recovery without recourse to the doctor. Self-deception may be another reason, or personal courage, or the stigma attaching to the label of tuberculosis, may prevent him giving in. Other important causes for delay are economic. Chief among these are the knowledge that a long period of sickness probably means a reduced family income, and possibly unemployment afterwards—factors that may prevent the patient consulting his doctor until he is incapacitated for work.

If the duration of symptoms before first medical interview is variable, so also is the period between the interview and the diagnosis. Burton Fanning (1934) states that in one series of tuberculous patients there was undue delay by the patient in 20 per cent of cases, and by the doctor in 7—not coextensive—25 per cent. In another series (different investigator and criteria), the corresponding percentages were 20 and 35. These figures may give a crude indication of responsibility, but they are of more interest perhaps in suggesting that in the majority of cases there is no undue delay in diagnosis from the onset of *really definite* symptoms. The difficulty is that the first symptoms are often quite indefinite.

Efforts to reduce this delay—While patients are left to decide whether they require treatment it is by no means easy to shorten the interval between symptoms and diagnosis. One method used for the purpose is publicity. "A larger number of persons who may be suffering from tuberculosis must be persuaded to submit themselves for examination" (Ministry of Health 1933). "The initiative to seek treatment when ill rests with the patient himself, and the only feasible remedy (for delay) lies in the education of the public as to symptoms and common dangers of tuberculosis and the need for securing prompt treatment" (Lancashire 1935c). Informative pamphlets have been issued by local health authorities and by the National Association for Prevention of Tuberculosis. For the family doctor, closer co-operation between the dispensary physician and himself has been secured, while he has been given the right to free sputum examination without intermediary. Since, in the country as a whole, there is little evidence on whether the interval between symptoms and diagnosis has been reduced in the past fifteen years, it is difficult to judge the effect of these specifically planned efforts. However, from the figures already given, it seems clear that even if diagnosis is now somewhat earlier in time it is not yet sufficiently early in stage. Two explanations of this comparative failure may be suggested.

One is that the planned efforts have not been adequately exploited—that enough has not been done to counter the economic factors that deter the patient from seeking advice, and that attempts to educate the public have not been sufficiently bold. Perhaps caution in the use of public instruction is partly due to anxiety lest "disease consciousness" or hypochondriasis be created in the nation (see Hutchison 1934). Again, while the family doctor has been given direct access to sputum examination, the even more important privilege of direct free radiographic chest examination and report has not yet been granted, and in the absence of this privilege intensive propaganda might burden hospitals with a large influx of unwanted out patients.

The other possible explanation for the failure is that the attempt to secure sufficiently early diagnosis *solely* by efforts to shorten the interval between symptoms and diagnosis is unsound, being based upon an outmoded conception of the evolution of pulmonary tuberculosis. It is nowadays supposed that the first stage of the process is pulmonary first infection discoverable by the tuberculin test and sometimes also radiographically. After a short or long interval progressive pulmonary lesions develop, which are often detectable with X rays for some considerable time before they give rise to significant symptoms or physical signs, though indefinite or insidious symptoms may be present at this stage. During this asymptomatic (latent, preclinical) stage progressive lesions are, therefore, recognisable as such

by radiograph but in no other way. They may be slight in extent, on the other hand they may develop beyond the size that corresponds to the Ministry of Health Group 1 classification before they lead to definite symptoms. When significant symptoms do develop they may be toxic or local or both. In this the so-called clinical or manifest stage the presence of progressive lesions is discoverable clinically radiographically and possibly bacteriologically. However while tubercle bacilli in the sputum with their implication of infectiousness may be found early in this stage they must be regarded as heralding, a comparatively late and dangerous phase when the whole course of the disease is taken into consideration.

The view differs from the older conception, which has dominated the methods of tuberculosis dispensary consultant practice, chiefly in emphasising the asymptomatic stage of progressive lesions and by laying the onset of disease from the first appearance of these lesions and not from development of the symptoms. The deduction is that efforts such as those already undertaken under the national tuberculosis scheme to shorten the interval between the onset of significant symptoms and the making of the diagnosis cannot be expected by themselves to secure diagnosis at a time when the lesions are slight non-infectious and usually susceptible to treatment. In expanded form and in conjunction with different methods however they should be of considerable use. On the other hand attempts to recognise progressive tuberculosis from early but indefinite symptoms such as slight general unfitness are more likely to confuse than to assist.

Methods of Obtaining Early Diagnosis in the Future

PERIODIC MEDICAL EXAMINATION

What is required therefore is a procedure whereby progressive lesions may be discovered in the asymptomatic or preclinical stage and as early as possible in their development. This must involve the periodic X-ray examination of persons supposed to be in good health. The length of the intervals between such examinations will be determined by the person's history by the risk likely to be run and by the presence of any suspicious X-ray shadows or symptoms.

Such a method is essentially dynamic for its aim is to detect changes—of progression and regression—and not merely to ascertain statically the extent and character of a lesion at a particular time. For this purpose it is well to secure if possible at least one negative examination to serve as the individual's base-line; hence the first examination should be carried out when he is likely to be in actual as well as in supposed health.

For economy of effort the unit for investigation would best be a group of persons who are normally associated together and therefore easily accessible—e.g. students of a college or workers in a factory—rather than isolated and independent individuals. Since it affords a reasonable chance of detecting the pulmonary lesions before symptoms arise and of forming a precise opinion as to the progressive nature of these lesions when detected routine periodic examination should secure improved results from treatment and greater safety for the local community. If lesions develop between the periodic examinations the initiative will of course rest as at present with the patient but with the established routine of medical examination the provision of the medical

service on the spot, and the warning to report particular complaints he might be expected to take this initiative sooner than in ordinary practice. In any event a limit is set to the delay and whether the disease is detected before or at the next routine examination the advantage of serial radiograms in helping to form an opinion will still apply.

Since it involves regular examination while in health and since it takes the main initiative of medical interview away from the patient and gives it to the doctor this method of obtaining early diagnosis rests upon a principle that differs profoundly from that underlying the patient family doctor specialist relationship of the greater part of medical practice. But it is of course no new principle for it has been adopted by many departments of the voluntary and municipal hospital and public health services—e.g. in child welfare and antenatal clinics in school medical and dental inspection—as well as by many dental surgeons in private practice.

THE PRESENT CONTACT EXAMINATION SERVICE OF THE TUBERCULOSIS DISPENSARY SYSTEM

At the time of its introduction the national tuberculosis scheme could not have included routine periodic examination as a part of the functions of its consultant dispensary service but an important step was taken in establishing the service for examination of contacts. This is, of course, no more than a step in the right direction. Since the first examination of a contact cannot be made until at least one case has been discovered in the household—and in nearly 10 per cent this discovery is not made until there has been a death—it is often made too late to prevent the disease from spreading. And since for the same reason first examination of a contact takes place at a time when already he has a more than average chance of having a progressive lesion the scheme may well fall in its intention to detect disease in its early stages.

Other limitations of the present contacts scheme lie in its execution. The proportion of home contacts examined as such is increasing; thus in London in 1931 the ratio of new contacts (adults and children) examined to new cases of tuberculosis taken on the dispensary registers was 1.8 to 1 (Bentley 1936c). But for the country as a whole in that year the ratio was only 1.2 to 1 (Ministry of Health 1935a) and taking the 1931 census figure of 3.72 as the average number of persons per family in England and Wales this represents slightly less than half the possible home contacts.

Again while in some dispensaries all adult contacts are re-radiographed on first examination in others this is only done if suspicious symptoms or signs be present—and while in some dispensaries the adult contact more particularly the young adult contact who is found normal on first examination is invited to return at regular intervals for re-examination so long as exposure continues and for some years afterwards, in others he is only instructed to return should he feel ill or alarmed. Even when close observation of apparently healthy young adult home contacts is being maintained many local authorities would consider themselves unable to carry the expense of including serial radiograms in such periodic examination. If all new contacts (adult and child) of all new cases of tuberculosis in the London dispensary area were to be radiographed once a year for five years and if the incidence of new cases were to remain at their present figure then according to a rough estimate made by Bentley (1936c) over 60,000 radiograms of home contacts (and if limited to contacts of sputum positive cases) would have to be taken and read annually in that area.

Finally it should be noted that the examination of contacts (child and adult) accounted for 8.7 per cent of the total number of cases of tuberculosis (discharge) in the dispensary service in 1931. (Ministry of Health 1931)

In assessing this result however, this figure of 8 per cent may be compared with Lloyd and MacPherson's (1936) finding that 30 per cent of their series of young adult cases of pulmonary tuberculosis gave a history of contact in the home, and therefore could presumably themselves have been located by a follow up of the family of the earlier case. The comparison is crude, since the material has a different age constitution, but it is nevertheless of some interest.

Although in its present form the examination of contacts under the tuberculosis scheme cannot be regarded as more than a partially developed example of periodic examination of adults in supposed health, the experience gained would be of immense value should any further step be contemplated. Whether the present service is likely to be expanded and modified, or to be eventually superseded, is a question that will be discussed later.

EXAMPLES OF SCHEMES OF PERIODIC EXAMINATION

During the past few years a number of group schemes of periodic examination of supposedly healthy persons for tuberculosis have been introduced, especially in the United States. So far the majority of them have been applied to groups of young adults, more particularly those who run a greater than average risk of exposure to open tuberculosis. For this category of persons, such schemes probably constitute the best means of observation, especially if combined with Mantoux testing, which—whatever its other implications—should exclude the presence of tuberculous infection in some of them (see Hart 1932, 1937). The selected groups have included medical students (Hetherington, McPhedran, Landis, and Opie 1931, 1935), medical and other university students (Soper and Wilson 1935, Diehl and Myers 1936), and hospital nurses. In most of the schemes the standard interval between routine examinations has been a year, but the prescribed interval is of course reduced in individual cases when indicated.

At the first examination after the introduction of a scheme, a number of persons in presumed health have usually been discovered to have serious and open lesions. In one large university hospital in America these included the sister in charge of the labour ward, and also a nurse working in the operating theatre. On the other hand (Downes 1934, Barnard 1934), the number of cases with severe lesions (Stage 2 or 3), expressed as a percentage of total active cases found, tends, as would be expected, to be smaller than in a series of tuberculous cases diagnosed in the ordinary way. While the immediate discoveries usually provide immediate justification for the scheme as a method of case finding, it is only after it has been in operation for some little time that its full benefits are experienced, with a further fall in the incidence of severe lesions among the active cases discovered.

Periodic examination of employees—The scheme that has attracted most attention is one that does not come into the category of examination of young adults exposed to exceptional risks of contact, but applies to adults of various ages under ordinary conditions of work. It has been in operation since 1928, under the direction of Dr H. H. Fellows and his associates, among the 13,000 employee population of the New York office of the Metropolitan Life Insurance Co., a mutual company with no stockholders.

Before the introduction of this scheme all employees had a complete physical examination once a year, but a chest radiogram was taken only if suspicious symptoms or signs were elicited. Now, however, in addition to their physical overhaul they have an annual screening, followed by a film if thought desirable. For those with doubtful lesions the interval is deliberately shortened, and all employees are asked to report during intermediate periods

if symptoms should appear. Persons discovered to have significant active lesions are kept under close supervision or are advised, though not compelled, to have sanatorium treatment, the latter can, if desired, be given at the company's own sanatorium so that the scheme is self-contained. These persons return to work after treatment as soon as they are considered fit.

The success of this scheme can be judged from the following details (The difference between the American and English classifications must be borne in mind, in particular the American subdivision of *T.B. minus* as well as of *T.B. plus* cases into three groups).

A total of 201 new cases with significant active lesions requiring treatment occurred between 1929 and 1935 among employees, the incidence per 10,000 employee population being 28 in 1929, 23 in 1930, thereafter remaining between 19 and 24 (except for 1933 when it was 14). The incidence, per 10,000 employee population, of new active cases found in Stage 2 or 3 (moderately or far advanced) fell from 21 in 1929 (already a year after the scheme had commenced) and 15 in 1930 to 12 in 1931, 7 in 1932 and 1933, 6 in 1934, and 9 in 1935, while the number of new active cases found in Stage 1 (minimal), expressed as a percentage of the total new active cases, rose from 31 in 1929–30 to 62 in 1932–33 and 1934–35.

A series of 141 active cases admitted to the company's sanatorium was analysed in especial detail. In the majority the disease had been detected before they were ill in the ordinary sense, and before physical signs were present. One third had no symptoms at the time of diagnosis, over half had not lost weight during the previous year, and only 13 per cent admitted to having a cough. Half were discovered at a routine examination, and the other half as a result of seeking advice for symptoms in an interval period. Thirty-one per cent of the cases were *T.B. plus* at some time during treatment. The percentage of the whole group detected in Stage 1 (minimal) was 65, which was stated to be five times the average admission rate for minimal cases among United States sanatoria in general. Of those discovered as a result of symptoms, 60 per cent were in Stage 1, for those discovered at routine examination the percentage was 69, while for those with no symptoms at the time of diagnosis it was as high as 79. Of the sputum positive cases however—one third of which were cases that had been diagnosed at a routine examination—only 27 per cent were in Stage 1 and 12 per cent were actually in Stage 3 (Fellows 1934a, 1934b, 1935, Reid 1933, 1934, 1935, Barnard 1934).

While it is too early to know the ultimate results of treatment of the active cases discovered by this scheme, it seems to have justified the hope of recognizing lesions at an earlier stage than before. One would expect even better results if a film as well as, or instead of, screening were made at each routine examination, so as to give a permanent record for comparison.

SCHEME FOR STUDENTS OF UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

In 1935, having regard to the gathering movement in favour of student health services in this country, to the predominance of pulmonary tuberculosis among the incapacitating diseases of young adults, and to the retardation in decline of mortality from this disease at this age in recent years, the medical school committee of University College Hospital instituted a scheme of periodic medical examination of students occupied in clinical training or in qualified house appointments (The examination, at present limited to the detection of pulmonary tuberculosis, may form part of a more comprehensive health service to be introduced later). The scheme was placed under the charge of Mrs. Gwen Hilton as radiologist, and of myself as physician, and has now been in operation for a year. Since it is apparently the first of its kind in this country, I will describe the administrative

routine in some detail (with permission of the dean), in the hope that it may assist others contemplating a similar service.

All but 4 of 300 eligible and accessible students have entered the scheme which is essentially voluntary. The information is treated as confidential, and any student found to have doubtful or definite progressive lesions is referred to the doctor of his choice for further opinion or advice. While he is not required to take the advice given, it is not anticipated that the problem of a serious or sputum positive case refusing treatment is likely to arise. The service is free but no provision is made for the cost of treatment.

An explanatory leaflet is issued to each student before his first examination. The latter consists of screening and film of the chest and the student answers a questionnaire concerning his family and past and present medical history as regards respiratory disease. Discussion between radiologist and physician is followed a few days later by an interview between the physician and the student at which the weight is recorded, the history completed and physical or sputum examination made if the history or radiogram indicates it. At this interview the result of the whole examination is given to the student any special action to be taken is decided upon and the date for the next routine examination fixed.

The standard interval between routine examinations is at present one year but this interval is shortened either at the will of the doctors if the history or radiogram of the previous examination suggests the advisability of closer observation or at the will of the student if suspicious symptoms develop. The student is particularly asked to seek advice during the period between routine examinations should he become worried about his chest, and it is hoped that the items on the questionnaire together with his medical training will enable him to recognise symptoms requiring an intermediate re-examination and that the established routine and convenient situation of the medical service will encourage him to take the initiative to obtain it.

Re-examinations are similar to the first examination, though screening is usually omitted. The chest film is taken under conditions so far as possible comparable with those used on the first occasion. At the clinical interview the weight record and medical history are brought up to date.

Already this scheme has revealed several persons with undoubtedly progressive though comparatively slight and favourable lesions requiring treatment. These lesions were discovered at routine examination were unaccompanied by definitely significant symptoms and would not have been detected until later without such a scheme. The number of such cases however was considered no more than would be expected in a medical student population.

It is hoped that within a few years the University College Hospital and any similar schemes will have demonstrated the practical possibilities and value of this type of health service for young adults and may justify their introduction on a large scale. By that time some of the results of the Prophit scheme of the Royal College of Physicians concerning the evolution of the types of pulmonary lesion likely to be met and their relation both to Mantoux sensitivity should be available. Besides serving as one possible model the present scheme should throw light on the significance of the common respiratory symptoms in a student population.

OBJECTIONS AND DIFFICULTIES

Since the adaptation of the tuberculosis services so as to allow of periodic examination is envisaged as a possibility of the near future both in the United States (Kiernan 1936) and in England (Trail 1936 Wingfield and MacPherson 1934) it is worth considering some of the objection likely to be raised and difficulties likely to be encountered.

The first is unnecessary radiological examinations. To avoid these, in a group of adults where there is a relatively low incidence of tuberculous infection negative Mantoux tests may be used to reduce the number of persons undergoing radiography as a part of their periodic examination. (Among medical students and hospital nurses judged by continental and American figures and by one set of English data—Edwards 1936—the incidence of negative reactors at the commencement of clinical training may be up to 20 per cent. or more.) In persons giving a negative response the test must of course be repeated at intervals so long as it remains negative.

Apart from the small economy obtained by Mantoux tests in such groups, it is usual for every individual to be radiographed at each routine examination even in the absence of symptoms since serial radiograms form the basis of the method. The presence or absence of symptoms is carefully noted but in the University College Hospital scheme at any rate physical examination is only made if symptoms or radiography suggests its advisability. This relegation of physical examination of the chest to an inferior position as a method of case-finding in tuberculosis may be objected to by some. It is however justified by results of clinical and radiological mass studies (see Reid 1934 Wingfield and MacPherson 1936 Trail 1936) while the impracticability in the present state of knowledge of sorting out adolescents for radiological examination by means of differences in general physical condition has also been pointed out (McKinlay and Watt 1934).

Anxiety state among examinees.—An objection usually raised to the principle in schemes of the type contemplated is that more harm will be done by producing neurophobia than good by detecting early disease (see for example Hutchinson 1934). At present this danger does not appear to have affected any established scheme to any serious extent the routine being accepted as of little mental consequence once the novelty has worn off. Since however every young adult population will contain many persons liable to develop anxiety about various diseases every effort should be made to implant health-consciousness rather than disease-consciousness. The eventual inclusion of periodic examination for early tuberculosis as part of larger schemes of health inspection should help towards this end. But the best argument against allowing the danger of creating tuberculo-phobia to hold up establishment of such schemes is that young adults more often than not already have an outstanding dread of tuberculosis—a dread founded on a sound knowledge of public health statistics. And the best weapon for removing this dread is to provide them with experience that the majority of their fellow workers who are found to have lesions return to their jobs after treatment. In any case the only alternative to schemes of this type—namely to emphasise early but vague symptoms—seems itself just a likely to produce neurophobia and with less return for the effort expended.

Stigma attached to tuberculosis.—Somewhat allied to the fear at present attached to tuberculosis is the associated social stigma.

This difficulty has to be faced in persuading members of schemes to undergo treatment when they do not feel particularly ill. If however the hopes placed in this method are fulfilled the gradual preponderance of mild sputum negative cases undergoing relatively short period of treatment should alter the popular and at present

substantially correct, picture of phthisis with its usual consequences

Moreover, the treatment of these slight cases may come to be simplified. Thus home supervision, with some degree of restricted life but without loss of work, has been used for some types "Ambulant" chrysotherapy has been suggested for certain early cases by Sayé (1934), while Diehl and Myers (1936) mention 16 students who have recently commenced pneumothorax treatment without loss of work. When sanatorium treatment is used, it may eventually be found practicable to arrange that sputum positive and asymptomatic cases are not sent to the same institution.

In association with these developments public instruction pointing out the importance of treatment of slight asymptomatic cases in preventing tuberculosis as it is usually known would be of value, while the sanatorium for such patients might appropriately be termed a preventorium. It is of interest that the present Sheffield tuberculosis service appears to be concentrating upon the hospitalisation and after care of the preclinical and minimal sputum negative case, regarding a sputum positive case as a comparatively late one, and claims by these measures to be reducing the stigma usually attached to the disease.

Classification—It may become advisable to classify the asymptomatic or preclinical case separately, as suggested by Opie (1935). In England this would necessitate subdivision of the *T B minus* class of Ministry of Health form 17/T (revised), the subgroups possibly to include such headings as slight or minimal, and asymptomatic progressive or preclinical. On the other hand, official recognition of insignificant or healing lesions not requiring treatment would be of little value. It should be emphasised that the gradual introduction of schemes of periodic examination in the country at large would have a marked effect upon the statistics of new cases, causing a gradual unnatural increase.

Difficulties in X ray interpretation—With a standard interval of a year one must expect to meet some cases that show extensive lesions and yet have had a negative previous examination (see Reid 1934), if only because some individuals will delay to report symptoms occurring during an intermediate period. Nevertheless, in a certain number of such cases the previous radiogram, on reinspection, may be found to show small shadows that had been regarded as insignificant, or had been missed altogether. A good quality of film, so far as possible comparable conditions, and a high degree of competence in interpretation are therefore essential, while even the smallest visible shadows could advantageously be recorded—for information only—at least until experience has been gained in the method.

When a particular shadow, ascribable to early tuberculosis, has been detected, difficulty may still arise as to its prognostic significance and as to any action required. It may be argued that many of the slight progressive lesions would have healed by themselves if left undiscovered, that others would do as well—even though by that time more extensive—if detected later on in the ordinary way, and that others will still progress unfavourably no matter what is done.

It may be stated, in reply, that the rationale of this method of diagnosis depends, so far as the individual patient is concerned, upon the hypothesis that, on the average, a slight and early case does better with than without treatment, and that with treatment it does better than does a later and more extensive case. The difficulty in interpreting a particular lesion, and of deciding any action required, can often be resolved after keeping the person under close observation. Intensive research, such as the

Prophit scheme, should add greatly to knowledge of the prognostic significance of these various early X ray lesions, but the results will not be available for some years, and delay in proceeding with trial routine schemes of periodic medical examination until then appears to be unjustifiable. In any case, even if they were assumed to be useless to the individual patient, such routine schemes would benefit the community by earlier removal of otherwise undetected sources of infection. Nevertheless, until further experience in interpretation has accumulated, we must face the occasional risk of unnecessary treatment as an alternative to postponing interference until too late. At the same time, this element of uncertainty makes it all the more necessary to see that treatment does not mean avoidable economic suffering.

Economic security of the examinee—If schemes of periodic examination are to be introduced on a large scale into industry, economic factors are likely to play a decisive part. I have already spoken of the temptation for a man to resume his occupation too soon and of the tendency to remain too long at work without seeking medical advice. But the financial difficulty is far greater when a man is advised to discontinue work and to undergo treatment at a time when he does not feel particularly ill. The assurance of economic security to the examinee would make this advice more acceptable, and would make him more likely to report suspicious symptoms arising in the interval between routine examinations—an integral part of the scheme.

Since the safety of the group of workers, as well as of the individual sufferer, must be considered, and at the same time the information obtained must be treated as confidential, the acceptability and success of a scheme would be best assured by providing economic security in some such way as the following. At the beginning information explaining its purpose might be circulated, with the assurance that under no circumstances will any worker suffer dismissal as a result of any discovery made under the scheme, and that where treatment is considered necessary he shall have the right to another opinion of his choice and shall receive, say, full wages (up to a maximum) for a limited period. The period might be chosen to cover the ordinary course of treatment and convalescence found after trial to be effective in favourable cases. The payments might be derived from a special sickness insurance fund.

Expenditure on schemes—The economic aspects of these schemes affect not only the individual but also the community, which ultimately bears the cost. Hence some estimate of expenditure must be attempted.

Probably the cheapest and most rapid radiographic method is that of the Powers X ray Tuberculosis Travelling Survey Service, a triumph of American mass production, which takes paper films at the rate of 150 an hour at an over all charge of about three shillings a head (Barnard 1934). The interpretation and clerical part of the examination are, of course not included in these figures. Presumably celluloid films, which are preferable, could be cheapened to satisfy a mass demand, but an apparatus for taking at high speed might be difficult to devise. The University College Hospital scheme absorbs 1 man hour per student per examination from the whole (medical, technical, and clerical) personnel and $\frac{1}{2}$ to $\frac{3}{4}$ hour from each student, but these times would undoubtedly be reduced as procedure became standardised.

In considering the return to be obtained for the expenditure in time and money, the number of cases likely to be found and the possible gain in the saving of life and man power, must be borne in mind. According to recent reports the incidence of clinical tuberculosis likely to be found in a survey of a young adult population in a large city of England or the United States is about 0.5 to 1 per

cent, while another 0.5 to 1 per cent may be found to have asymptomatic significant lesions potentially or actually progressive the figures being considerably higher where groups of contacts or persons in unusually poor environments are being examined (Barnard 1934, Downes 1934, Reid 1934, Fellows 1934, Opie 1935, Wingfield and MacPherson 1936). These figures must be taken as rough indications and the incidence of lesions would be expected to be somewhat smaller in subsequent examinations than in a first survey. Thus the incidence of (mainly young adult) applicants for employment at the Metropolitan Life Insurance Co. from 1927 to 1932 with significant active lesions requiring treatment was 0.4 per cent, while the annual incidence of new such cases among the actual employee population from 1930 to 1935 was about 0.2 per cent.

The average annual expenditure per head of the community on tuberculosis services is more than 2s. at the present time and the immediate increase in expenditure under this head due to schemes of periodic examinations were the whole population included would probably be at least double this amount annually for diagnosis alone. The expenditure on treatment per head of the community would also increase at first, since more cases of tuberculosis would be diagnosed and sent for treatment. But against this increase must be set the fact that much of the present expenditure goes to prolonged and unprofitable treatment and to the after-care of chronic cases with little prospect of resuming any useful occupation. If the proportion of cases diagnosed in a slight and favourable stage increases the expenditure per case should decline and this decline together with the hoped for reduction in new cases as the result of eradication of infective sources, will tend to offset the immediate increase in expenditure on treatment per head of the community.

The value to the community of the lives and health that might be saved by schemes of the type described, even if only assessed in terms of fecundity or of the monetary value of their potential work is however the most important consideration in estimating whether the increased expenditure entailed is justified. For the younger adult age-groups this value is enhanced by the notorious rapidly changing age-composition of the population towards a preponderance of older persons and by the recent decline in the birth-rate. (For calculation on an actuarial basis of the prospective money value of a man as a wage-earner at different ages, and according to the amount of his earnings see Dublin and Lotka 1930.)

PERIODIC MEDICAL EXAMINATION ON A LARGE SCALE

I have purposely emphasised the possible objections and difficulties. But since it is to be hoped that the method will in spite of them find increasing favour in this country it is well to conclude by indicating how such schemes might be introduced in the community at large.

It seems desirable at first to limit them to young adults aged 15-24 and to select groups that are easily accessible—more particularly those with a greater than average chance of developing progressive lesions. These categories will include university students and nurses, and persons attending diabetic and antenatal clinics. The next step might be to introduce schemes for young adults in State-controlled employment such as the civil service or Navy after which schemes might be developed among industrial groups, presumably under the control of the industrial medical or public health service.

At some point in their development these schemes would come into conflict with the diagnostic side both of the consultant and of the contacts service of the present tuberculosis dispensary system. It would be difficult even if it were desirable to avoid taking over the function of the former, but the future of the contact examination service is a more complex matter though obviously of great importance since the yield of cases is higher than in any other set of

persons. The points in which the present contact examination service differs from a fully developed scheme of periodic examination have already been described. There appear to be two alternatives for the future.

The first is that the present contact service be expanded and modified so as to work so far as possible on the model of the other fully developed schemes. The main object of expansion would be to render practicable the examination of a greater number of new adult contacts and to make their follow up more complete. This expansion even if limited to young adults, would have to be very considerable from the estimates given previously. A compromise might however be reached whereby adult contacts of all ages are radiographed once (to discover the primary infective source and any other cases) while further observation by periodic examination and serial radiography is limited to young adults in those families where the original case, or any other discovered at first examination is sputum positive. The main point in favour of retaining a contacts service in some form or other is the advantage of having one doctor in charge of a tuberculous person and his entire family for purposes of observation and social care.

The second alternative is to permit the functions of the present contact examination service to be taken over by the fully developed schemes of periodic examination (which of course include non contacts as well as home contacts). Certainly the dual purpose of the latter—to help prevent disabling pulmonary tuberculosis and to help prevent spread of infection to others—seems to cover the diagnostic functions of any special contacts service. And it is possible that selection of a group of young adults on an industrial or study basis rather than on a family basis might do more to achieve this dual purpose because of the greater accessibility of the examinees while the determination of an individual's first examination under a scheme by his age rather than by the discovery of a clinical case of tuberculosis in his proximity might also be an advantage. The industrial or other fully developed schemes would allow the close observation of persons who have had pleurisy the full importance of which as a precursor of progressive pulmonary lesions is becoming increasingly realised (see Traill 1937). Finally the industrial or other schemes could form part of a comprehensive health service that would include the detection of pulmonary tuberculosis as merely one of its important functions.

Conclusions Regarding Early Diagnosis

Earlier diagnosis and treatment of progressive pulmonary tuberculosis among adults should benefit the community by helping to prevent the more serious forms of the disease, to restore more persons to health and work and to eradicate sources of infection. For achieving early diagnosis in the past we have tended to concentrate upon the early clinical cases—i.e. the patient who already has symptoms or physical signs. In the future we must concentrate upon the preclinical case. In the past we have for the most part attempted to recognise the presence of progressive lesion soon after symptoms have developed by a single examination at the request of the individual when he feels ill. In the future we must try as far as possible to discover these lesions before the onset of definite symptoms by the routine periodic examination of selected groups of individuals, particularly young adults, supposedly in health, serial radiograms and (especially where a low tuberculous

infection incidence prevails) Mantoux tests would be the basis of such examinations

* * *

With its sensitivity to social conditions, its chronic course, its infectiousness, and its possible detection before signs and symptoms develop, and with the benefits attainable from early treatment, pulmonary tuberculosis has offered and still offers remarkable opportunities for the practice of preventive medicine. And the four measures particularly emphasised in these lectures—social measures applicable to the community at large, social measures applicable to the individual sufferer and his family, protection of members of the community from infectious disease, and the detection of the first signs of deviation from health—reflect the varied aspects of preventive medical practice in general. Furthermore, the changes envisaged in applying these four measures to the particular disease tuberculosis coincide with a general movement of the profession towards regarding maintenance of health as its primary goal, and towards a greater interest in those social conditions often forming the background of illness. The measures used in the fight against tuberculosis can form the spearhead of this movement.

I wish to record my deep gratitude to Prof G Payling Wright for the advice given throughout the preparation of these lectures. I wish also to thank Dr G W Pickering for suggestions towards improvement of the text, Dr A J Morland and Miss H M Matheson, of Holborn Tuberculosis Dispensary, and Dr C H C Toussaint and Miss O J Pike of Bermondsey Dispensary, for supplying certain data, and Dr J E Chapman, Dr T O Garland, and Dr D H Mills for help on special points.

REFERENCES

- Barnard, M W (1934) *Amer J publ Hlth* 24, 8
 Bentley, F J (1936a) *Spec Rep Ser med Res Coun Lond* No 215, p 77
 — (1936b) *Ibid* pp 87-92
 — (1936c) *Trans nat Ass Tuberc Lond* 22 30
 Beveridge W (1928) *British Food Control Oxford*
 Blacklock J W W (1930) *Brit med J* 2 324
 Bowley A L (1936) *Nineteenth Century* 120 718
 Bradbury, F C S (1933) *Causal Factors in Tuberculosis (Nat Ass Tuberc Lond)*
 Burnett, E (1932) *Quart Bull Hlth Org Lo N* 1 489
 Burton Fanning, F W (1934) *J State Med* 42 497
 Cathcart, E P and Murray A M T (1936) *Spec Rep Ser med Res Coun Lond* No 218
 Cooper Duff in House of Commons ref (1937) *Brit med J* 1, 309
 Dahl, R H (1933) *Acta med scand* 80 323
 Diehl, H S, and Myers J Arthur (1936) *Trans nat Ass Tuberc N Y* 32, 103
 Dobbs R H, and Russell, A E (1937) *Lancet*, March 13th p 648
 Downes J (1934) *Milbank mem F quart Bull* 12 1
 Dublin L I and Lotka A J (1930) *The Money Value of a Man* New York
 Edwards H R (1937) personal communication
 Edwards, P W (1936) *Tubercle Lond* 18 101
 Fellows H H (1934a) *Amer Rev Tuberc* 30 109
 — (1934b) *Amer J med Sci* 188 533
 — (1936) *Amer J publ Hlth* 25 109
 Friend G E (1935) *The Schoolboy: A Study of his Nutrition Physical Development and Health* Cambridge
 Greenwood M (1935) *Epidemics and Crowd Diseases* London p 342
 Hart P D Arcy (1932) *Spec Rep Ser med Res Coun Lond* No 164
 — (1937) *Publ Hlth Lond* 50, 151
 — and Hilton E L G unpublished
 — and Wright G Payling unpublished
 Hartley P Horton Smith Wingfield R C and Burrows V A (1935) *Brompton Hosp Rep* 4 1
 Helmbeck J (1936) *Tubercle Lond* 18 97
 Hetherington H W McPhedran F M Landis H R M and Ople F L (1931) *Arch intern Med* 48 731
 — (1935) *Ibid* 55 709
 Hill A Bradford (1936) *J R Statist Soc* 99 247
 Holmes E M (1936) *Proc R Soc Med* 29 1669
 Hutchison R (1934) *Brit med J* 1 365
 Jessel G (1930) *Tubercle Lond* 11 493
 Joint Tuberculosis Council (1936) *Brit med J* 2 1212
 Kercstulm C and Park W H (1936) *Amer Rev Tuberc* 34 437
 Kierman F (1936) *Trans nat Ass Tuberc Lond* 22 22

- Lancashire (1926-28 1933-34 1935a) *Reps. of central Tuberc Officer*
 — (1935b) *Ibid* p 12
 — (1935c) *Ibid* p 10
Lancet (1936) 2 450
 League of Nations (1936) *Interim Rep of Mixed Committee on Problem of Nutrition* London
 Leighton, G and McKinlay P L (1930) *Report on an Investigation in Lanarkshire Schools (Dept of Hlth for Scotland)*
 Lloyd, W E and MacPherson A M C (1936) *Brit med J* 2 1130
 London County Council (1935a) *Ann Rep III (Pt I)* p 51
 — (1935b) *Ibid* p 52
 M Goulge G C M (1933) *Proc R Soc Med* 26 677
 — and Kirby, J (1936) *Poverty and Public Health* London
 McKinlay P L and Watt, E (1934) *Lancet* 2, 32
 MacNalty, A S (1932a) *Rep publ Hlth med Sulp Lond* No 64, p 97
 — (1932b) *Ibid* p 91
 — (1932c) *Ibid* p 84
 — (1932d) *Ibid* p 110
 Mann, H C Corry (1926) *Spec Rep Ser med Res Coun Lond* No 105
 Mariette E S (1936) *Tubercle Lond* 18 103
 Marx, L C (1936) *Ibid* 17 204
 Medical Research Council (1936) *Spec Rep Ser med Res Coun Lond* No 215, preface
 Memorandum (1936) *War Prevention and Medical Characteristics and Consequences of Modern Warfare, Medical Peace Campaign*, London
 Milroy G (1929) *Suggestions as to Lectures on State Medicine and Public Hygiene*, London
 Ministry of Health (1930) *Memorandum* 37/35 T (revised)
 — (1933) *Ann Rep Chief Med Off* p 125
 — (1935a) *Ibid* pp 208 209
 — (1935b) *Ibid* p 210
 — (1935c) *Ibid* p 77
 — (1935d) *Ibid* p 214
 — (1935e) *Ibid* p 87
 — (1935-36) *17th Ann Rep* p 270
 Newcastle-upon Tyne (1937) *Diets of 69 Working class Families (City Health Dept)*
 Ople, E L (1935) *Amer Rev Tuberc* 32, 617
 — McPhedran F M and Putnam P (1935) *Amer J Hyg* 22 644
 — — (1936) *Ibid* 23 530
 Orr, J B (1928) *Lancet* 1, 202
 — (1936) *Food Health and Income*, London
 — and Clark, M L (1930) *Lancet* 2 594
 Pagel, W (1936) *Papworth Res Bull*
 Papworth (1935) *Ann Rep Village Settlement*
 Powell D A (1926) *Cripples J* 2 254
 Putnam, P (1936) *Amer J Hyg* 24, 536
 Registrar General (1921) *Decenn Supp Eng and Wales Pt 9*, pp 17, 132
 Reid A O (1933) *Ann Rep Chest Dept Metropol Life Insur Co N Y*
 — (1934) *Amer J med Sci* 188 178
 — (1935) in *Rep of Medical Rest Rooms Metropol Life Insur Co N Y* p 9
 Saye L (1934) *ref. Brit med J* 2, 727
 Soper W B and Wilson J L (1935) *Trans Ass Amer Phys* 50, 60
 Stocks, P (1936) *Trans R Statist Soc* 99 283
 Trail R R (1934) *Brit med J* 1 373
 — (1936) *Trans nat Ass Tuberc Lond* 22 67
 — (1937) *Lancet* Jan 30th, p 247
 — and Stockman G D (1931) *Mortality after Sanatorium Treatment (Mildhurst Sanatorium)*
 — (1932) *Quart J Med n.s* 1, 415
 Wallgren, A (1934) *J Amer med Ass* 103 1341
 Webb S and Webb B (1936) *Soviet Communism a New Civilisation* 1, London, p 856
 Wingfield, R C and MacPherson A M C (1936) *Brit med J* 1 741

LANCASHIRE MENTAL HOSPITALS—The Minister of Health has sanctioned the borrowing of £488,666 by the Lancashire Mental Hospitals Board for works in connexion with the extension of the Brockhall Certified Institution for mental defectives to provide accommodation for 1326 additional patients. This will bring the total accommodation of the institution up to 2098. The additional accommodation to be provided includes a hospital, school, work rooms, recreation hall, staff cottages and administrative buildings.

SEAMEN'S HOSPITAL SOCIETY—The Earl of Athlone, presiding at the annual meeting of the court of governors of this society on April 21st, said that at the new Albert Dock Hospital a model fracture clinic is being built through Lord Nuffield's generosity where after discharge from the wards, patients will be retained under observation and treatment in the rehabilitation centre. There will also be a dining room where men who only receive a maximum of 30s a week as compensation pay will receive proper nourishment. Only £9500 is now required to complete the appeal made by the Albert Dock Hospital rebuilding fund for £50,000.

INSULIN SHOCK TREATMENT OF SCHIZOPHRENIA

By G W B JAMES M.C. M.D. Lond.

PHYSICIAN FOR MENTAL DISEASES TO ST. MART'S HOSPITAL,
LONDON AND MOORCROFT HOUSE, HILLINGDON LECTURER
IN MENTAL DISEASES AT ST. MART'S HOSPITAL
MEDICAL SCHOOL

RUDOLF FREUDENBERG M.D. Freiburg

ADJUNCT PHYSICIAN TO MOORCROFT HOUSE HILLINGDON AND

A TANDY CANNON L.R.C.P. Irel.

ASSISTANT PHYSICIAN MOORCROFT HOUSE, HILLINGDON

GROWING interest is being shown in the insulin shock treatment of schizophrenia introduced by M Sakel in 1933 at the Pötschl Clinic Vienna. By the courtesy of Prof O Pötschl we were enabled to study the method in Vienna and formed the opinion that it may prove to be an important therapeutic contribution to the attack on a disease which has hitherto defeated most curative efforts by its chronic and progressive course. As a result we have used the insulin shock therapy at Moorcroft House, Hillingdon since the beginning of the present year. To discuss results would be premature in view of our brief experience; it may be said in general that they are encouraging.

References in British journals to this form of treatment are at present limited. Apart from the well known study by I G H. Wilson (1936) there has been a brief note by D K Henderson (1936) in the report of the Edinburgh Royal Hospital on the cases treated there by P Strocker and recent articles by L W Russell (1937) and E H Larkin (1937). The latter are of special interest in that they report the use of the treatment in two English hospitals and set out the results obtained in a small series of cases.

Some definition of terms commonly confused may be useful at the outset. It is essential to distinguish between shock and coma sometimes used synonymously. The term shock should be confined to the period of time between the initial symptoms of hypoglycemia and their interruption by the administration of glucose. The term coma on the other hand, should be limited to the stage of hypoglycemia during which consciousness is lost; the patient being insensible to stimuli such as shouting his name or touching his body. We speak of deep coma when hypotonus appears, the corneal and plantar reflexes being absent. Deep coma should never be permitted to last longer than 1½ hours.

We attach great importance to certain details in which our technique differs from that outlined by Russell and by Larkin. For example Russell states that he leaves the patient in coma for 2-2½ hours daily but fails to say by what standards the depth of coma is measured. If the patient is left more than 1½ hours in deep coma there is serious risk that restoration may be difficult. Larkin avoids the occurrence of epileptiform fits by premedication with Prominal. Our experience confirms the generally accepted view that fits are useful therapeutic accidents. In selected catatonic cases we have therefore induced occasional epileptiform seizures by the intravenous use of Cardiazol insulin being omitted on these days, thus combining the methods of I Meduna (1937) and Sakel. These Cardiazol seizures lasting a few seconds require no remedial interference but fits occurring during hypoglycemia must be interrupted

forthwith on account of the danger that status epilepticus may develop.

More importance should be attached to constant medical attendance on patients in hypoglycemia. Alarming emergencies may arise sudden in onset and serious in their results. Hypoglycemic coma may be compared with anaesthesia and the anaesthetist never leaves his patient. A doctor should remain in the insulin department from the time of the injection until the last patient is awake. When six or more patients are undergoing treatment a second doctor should be quickly available during the critical period of hypoglycemia (in our case 10 A.M. to noon) as it has happened that we had to deal with two or more emergencies simultaneously. Care must be exercised to ensure that the nursing staff can obtain a doctor at short notice for the rest of the day and following night.

If wide departures are made from the established principles of the treatment as evolved by its originator serious risk to life will ensue and the method may thereby be brought into disrepute. These considerations must serve as our excuse for recapitulating in detail the technique used in Vienna. Munzinger and Otwork carefully summarised by E P Frostig in a lecture given to the Arbeitsgemeinschaft für Psychiatrie und Pathophysiologie Vienna in 1936 and as far as we know unpublished. We include a description of the major manifestations to be expected during the shock period and their management with the object of obtaining maximum therapeutic results with a minimum of risk.

THE SELECTION OF MATERIAL

The criteria of the diagnosis of schizophrenia is one of the first difficulties. The standards are subject to slight variations in different countries and even in different schools in the same country. All workers should follow a definite plan for arriving at the diagnosis and report the data on which that diagnosis rests. Further the different classes into which workers divide schizophrenia should be clearly defined and described as it would seem that insulin therapy produces different results in the separate clinical types of the disease. Our own diagnostic requirements roughly follow the classical description of dementia praecox and paraphrenia by Kraepelin and therefore include patients that some writers would distinguish from schizophrenia. In recording histories it is of the utmost importance to differentiate between the more chronic and progressive cases and those with acute onset and a tendency to show remissions; this differentiation will be found essential when a final assessment of the worth of the method comes to be made. We would stress the importance of classifying the cases according to the duration of schizophrenic symptoms: they are usually grouped under headings which distinguish the length of the illness as up to six months up to one year up to eighteen months and over eighteen months.

PHYSICAL EXAMINATION OF THE PATIENT

A detailed and orderly physical examination is essential. This is especially necessary if advanced cases are to be treated. Contra indications to insulin therapy are not yet clearly defined and further accurate information on this subject is needed.

The rule at Moorcroft House is that when routine examination reveals any suspicion of organic disease—especially cardiovascular or hepatic disease—the treatment is postponed or abandoned. We have learned to pay particular attention to the lean asthenic type of individual with cold extremities

and low blood pressure. Our experience teaches that such types are highly sensitive to insulin, often produce severe hypoglycæmic manifestations, and prove difficult to arouse from coma after the administration of glucose. Such difficulties appear to us less common in the athletic and pyknic physical types. In asthenic types insulin may more often produce toxic hypoglycæmic reactions and after effects, which include vomiting, diarrhoea, tachycardia, and pyrexia. When such manifestations occur, treatment (after a short rest) is carried on with much reduced doses. The patient may then acquire a higher level of resistance, described by E. Küppers (1937) as "adaptation." In the experience of one of us (Freudenberg 1936), this adaptation is assisted by giving intramuscular injections of vitamin B, together with an extract of suprarenal cortex every evening until adaptation is established. In a few patients very resistant to insulin premedication with alkalis—e.g., sod. bicarb—orally or intravenously has been found to increase sensitivity (R. F.)

BRAND OF INSULIN

All the experience gained of insulin shock therapy has been obtained by the use of pancreatic extracts. These extracts are standardised experimentally by their effects on the blood sugar of rabbits. The mechanism of the effects of high doses of insulin continued over a long period, as in insulin shock therapy, has not yet received sufficient experimental investigation, these effects having been studied chiefly by clinical observations recently summarised by K. Th. Dussik and R. Freudenberg in a lecture given to the Arbeitsgemeinschaft für Psychiatrie und Pathophysiologie, printed by Ars medica Verlag, Vienna, 1937.

There seem to be small differences in the effects produced by different trade preparations of insulin. For this reason the commercial preparations used should always be mentioned in records of cases. We have used the Wellcome brand of pure crystalline insulin. Our experience confirms the view of Müller (1936) who lays stress on the apparent increase in sensitivity to insulin which occurs in many patients during treatment. We believe this change in sensitivity to be of the utmost importance, and it is our rule to attempt to diminish the amount of insulin once the coma dose has been reached. Other patients develop increased resistance to insulin in the course of treatment. It is of interest that increased sensitivity may change to a high resistance to insulin in the same patient. These facts have not yet been satisfactorily explained. During our fifteen weeks' experience crystalline insulin has not produced an urticarial rash in any of our cases. The "Wellcome" brand has the great advantage of being prepared in three strengths, 80, 40, and 20 units per c.c.m., thus saving patients on large doses much discomfort.

PHASES OF THE TREATMENT

Phase I—The usual practice is to begin the treatment with a subcutaneous injection of 20 units of insulin (or less in the case of debilitated patients) given at 7 A.M., the patient fasting from 7.30 P.M. the night before. This dose is increased daily by 5 to 10 units until the initial coma dose (15–300 units) has been reached. In two of our cases 30 units produced severe epileptiform convulsions less than one hour after injection, in one of these coma is now obtained with 15 units. This patient was of the asthenic type. The duration of phase I depends on the sensitivity of the patient, the amount by which the dose is increased, and probably also on factors which are

at present unknown. The physical and mental signs and symptoms in phase I are here briefly described as far as possible in the order in which they appear. No hard and fast rule can be laid down either as to the time or order in which they arise. Indeed, some patients seem to present very few signs and symptoms in phase I, and the manifestations may vary from day to day in the same patient.

During the first hour signs and symptoms are mostly absent. Flushing of the face is usually the first noticeable change, and may be followed by a mild euphoria, accompanied by giggling and often a feeling of well being and strength. Commonly associated with the euphoria is a period of lucidity and insight which will be referred to below. The patient often complains of hunger. Sweating may occur with the flushing, but is more marked later when the flush has given way to pallor. Somnolence follows, often after a short spell of restless tossing in the bed. The euphoric period may develop into almost any type of excitement from singing, whistling, and obscene remarks, to a wild psycho-motor restlessness, with constant incoördinated movements, from which injury may result unless padding of the bedstead is adequate. There is usually a preliminary rise in the pulse rate, and slowing in the later stages. Myoclonic twitches may appear in the third or fourth hour, when the patient is gradually losing consciousness, and may develop into an epileptiform attack.

Interruption in this phase is carried out by making the patient drink sugared tea (7 oz. of sugar in 500 c.c.m.).

Phase II—This is the phase which is ushered in by the establishment of the initial coma, afterwards repeated daily during this phase of the treatment. In coma the patient is unconscious and incapable of being roused, as it progresses salivation becomes profuse, and extensor plantar responses, often bilateral and spontaneous, appear. Next hyper-tonus, usually in flexion, is seen but this should disappear and give place to hypotonus.

From the clinical point of view the coma now enters on a stage requiring careful observation. With hypotonus and flaccidity of the muscular system generally, the reflexes disappear. There is no response to the plantar reflex, the corneal reflex is absent, the deep and superficial reflexes cannot be obtained. Eventually, if the coma is allowed to proceed, hypertonus may reappear. The upper limbs are rigidly extended in pronation, the lower limbs become rigid in extension, opisthotonus may occur and the patient resembles the decerebrate animal. With the early hypertonus and myoclonic twitches the pupils tend to be dilated. When hypotonus and flaccidity occur and the corneal and other reflexes fail, the pupils are contracted. Finally, in the stage at which hypertonus reappears, the pupils again dilate and may fail to react to light. In this condition, referred to above as resembling the decerebrate animal, interruption becomes an immediate necessity.

Dosage should be arranged so that coma does not begin until the third hour following the insulin injection. If coma commences prematurely it is a sign that the dose is too big.

A word of caution as to the management of all cases during the hypoglycæmic period may be added here. Patients should be left as quiet as possible. Movements or struggling will produce compensatory secretion of adrenaline, resulting in a lessening of the depth of coma.

Phase III—This term was used by Sakel to denote periods of rest. It is still used in this sense and now means the weekly day of freedom (Sundays), and the compulsory rests after the patient has suffered from "emergencies" (see below), or after effects of treatment. A day or more of rest should also follow diarrhoea and pyrexia.

Phase IV—This phase (withdrawal of the therapy) begins when no further clinical improvement can be obtained and in any case after about three months of treatment. The dose of insulin is reduced to roughly one-third or less of the coma dose and interruption is carried out about 2 hours after the injection. This process occupies from 4 to 8 days.

INTERRUPTION

In phase II interruption is normally carried out by the nasal tube. We believe the tube should be passed only when the patient is in coma. Gastric secretion usually increased in quantity is withdrawn and tested by litmus paper so that there can be no question that the tube has arrived at its proper destination. A precautionary passing of the tube at an early stage of coma is justified when signs such as severe myoclonic twitchings suggest that a state of emergency is imminent. If such precautionary insertion of the tube has been carried out and a period of time has elapsed before actual interruption the gastric juice is again tested. A funnel and tube with a glass connexion enables dilute sugared tea (7 oz. in 500 c.c.m.) to be run into the stomach. When a patient is known to have a tendency to vomit 2 minims of 1 : 1000 solution of atropine sulphate are introduced through the tube before the feed. During the whole of this operation the tube is held in position by doctor or nurse. For patients refusing meals this opportunity is used to administer a good feed containing the same amount of sugar with milk cream and three eggs. After the introduction of the feed the nasal tube is removed immediately. Our experience supports the view that patients are adversely affected by waking to find the nasal tube in position and we consider that to leave the tube in situ until the patient awakes as advised by Larkin is undesirable. Waking should take place within 20 to 30 minutes and the patient is then given cake or biscuits and milk to drink. During coma the body temperature falls to a very low level often under 95° F. After interruption patients appear cold with shivering and goose flesh and it is our practice to have hot-water bottles ready to apply in every case.

The daily length of the coma must be extended gradually and never continued beyond a period (discovered by trial) that allows the patient to awake easily and without after effects. There is an optimum duration of coma for each patient which is often less than 1½ hours.

After interruption patients rest in bed for about half an hour care being taken to change the clothing which is generally soaked in perspiration. Patients take an ordinary lunch and someone must see that sufficient food is taken at all subsequent meals or late hypoglycemia symptoms may occur. It is our practice to record the food consumed during the day, a task entrusted to one of the nurses.

AFTER EFFECTS

Interference must be made to after effects rare if proper precautions are observed. Among them is vomiting with loss of the glucose feed and resulting repetition of any of the hypoglycemia signs including coma and fits. Intravenous glucose may be required when this happens but if the patient is sufficiently awake and the manifestations of hypoglycemia are slight carbohydrate food may be given by the mouth. A less frequent after effect is the progressive deepening of the coma subsequent to the administration of glucose. When this phenomenon is observed intravenous interruption is required.

General Indications for Interruption

Hypoglycemia must always be interrupted—

- 1 By the end of the fifth hour from the time of the injection—e.g. by noon if beginning at 7 A.M.
- 2 Whenever gross disturbances or variations of the pulse occur—e.g. irregularities or rates of over 120 or less than 40.
- 3 If hyperextension of the limbs with pronation of the upper limbs is persistent.
- 4 In the presence of stridor with cyanosis and movement of the accessory muscles of respiration.
- 5 When hunger excitement occurs (Sakel 1935). This is to be distinguished from the customary requests for food, and consists of wild excitement and a fierce shouted insistence on an immediate meal.

Interruption should take place at whatever stage of the hypoglycemia these general indications appear. Sometimes the patient is able to drink his sugared tea but usually the nasal tube is required.

INDICATIONS FOR INTRAVENOUS INTERRUPTION EMERGENCIES

The following emergencies are indications for intravenous interruption—

- 1 Respiratory embarrassments which include the sudden cessation of respiration and laryngeal spasm.
- 2 The premature incidence of coma. A premature coma tends to deepen with alarming rapidity. This phenomenon results from an undue increase in the initial coma dose or in a specially sensitive patient.
- 3 Obvious cyanosis of the mucous membranes with a weak and rapid pulse.
- 4 Epileptiform fits. These attacks may occur at any time in the hypoglycemic period or after interruption. Fits after interruption usually develop within 40 to 60 minutes. They may occur rarely at a much later period should hypoglycemia for any reason return. In addition to the intravenous glucose the nasal tube should be passed and a feed inserted into the stomach, thus providing a carbohydrate depot on which the patient can draw. In the epileptiform attack, the usual precautions against tongue biting are taken.
- 5 Cardiovascular collapse. In this sudden emergency subcutaneous injection of adrenaline (1 c.c.m. of 1 : 1000 solution) is the best initial step. Intravenous therapy may be rendered impossible by the collapsed condition of the veins in which case the pharyngeal strand proceeds to give an intraventricular injection of 2 to 4 c.c.m. of 33 per cent glucose solution. If adrenaline has not already been given subcutaneously or intraventricularly it may be added to the intraventricular injection.
- 6 Vomiting.
- 7 A state of wild psychomotor excitement with flushed face and dilated pupils. This condition is sometimes seen after interruption by nasal tube and in such cases intravenous glucose must be given. If the excitement continues lumbar puncture will sometimes be necessary. I amidehyde or sodium hyaluronate by the rectum are useful.

CERTAIN POINTS OF TECHNIQUE

Lumbar puncture is essential when the patient fails to awake after intravenous interruption. If this condition becomes more advisable and can be done 300 c.c.m. of blood can be withdrawn.

A 33 per cent. solution of glucose is used for intravenous interruption the injection being from 60 to 120 c.c.m. being sufficient to awake in most cases. We use 50 c.c.m. syringes which are refilled while the patient remains in position.

There is one negative measure which is never found very useful in certain emergencies—namely the use of mixed carbon dioxide (5 per cent.) in a closed space. Administration of this gas is especially useful in cases of cyanosis who fail to awake after intravenous interruption. It has also relieved

We have applied the suggestion of Sakel (1936) that paranoid cases be treated with deep coma. He advocates that in treating catatonic stupor interruption should be effected while the patient is in a euphoric or excited condition. This often puts an end to the stupor, exposing a loose system of paranoid ideas. Subsequent treatment should then be directed towards obtaining deep coma. On the other hand, catatonic excitement should be interrupted during the period of quiet somnolence before the onset of coma, carefully avoiding interruption during excitement. When the patient has become sufficiently quiet the treatment is continued with daily coma.

We never use adrenaline to secure interruption, its use for this purpose having been abandoned in Vienna. We reserve it for cardiovascular collapse and laryngeal spasm.

PSYCHOLOGICAL SYMPTOMS AND THERAPEUTIC MEASURES

We have already stated that before coma appears euphoria is common, with some degree of lucidity and insight. This is an opportunity for the physician to re-establish contact with inaccessible patients. A word of warning is here necessary. Throughout the treatment until comatose, patients are extremely sensitive and exhibit a pronounced hyperacusis. Caution must be exercised as to what is said in the neighbourhood of the patient, even in a whisper. An unwise chance remark may act as a serious psychic trauma. It is best to leave the patient alone while he is waking from coma and, in the early days of the treatment, to avoid any discussion with him concerning his illness. Such discussion has in our experience resulted in relapse in an otherwise improved patient. For this reason the visits of relatives are a potential source of danger.

The phenomenon of "reactivated psychosis" is described by Sakel (1935) as a reproduction of psychotic symptoms during the hypoglycæmic period, the patient being normal during the rest of the day. This phenomenon has frequently been observed by us, and seems to be explained as a combination of the "insulin psychosis" observed in mentally normal diabetics, and the actual schizophrenic condition for which the patient is being treated. Sakel advises that phase II should be continued until the "reactivated psychosis" disappears. There does not seem to be general agreement on this point, and our experience is still too limited to enable us to form an opinion. All agree that the daily hypoglycæmia should never be interrupted during "reactivation".

The care of the patient after interruption is important. So far as is feasible we try to ensure that some definite occupation is provided for the afternoon and evening. Patients leaving the grounds should be accompanied by a nurse or responsible relative and chocolate should be carried as a convenient form of sugar in case of any return of hypoglycæmic symptoms. This has actually occurred to one of our patients during a walk. Night nurses must be familiar with the signs indicating hypoglycæmia, and must be instructed to pay frequent visits during the night to patients undergoing treatment.

CLASSIFICATION OF RESULTS

We are often asked as to the mortality to be expected among patients treated with insulin shock therapy. The most recent figure from a series of 400 cases (Küppers 1937) is 1.5 per cent. It must not be forgotten that the 400 cases collected by Küppers contain those treated in the early days when mortality

was higher from inexperience and faulty technique. We believe that the death rate will always prove to be in inverse relationship to the care with which a proved method of technique is adopted and applied.

We would strongly recommend the adoption of some standard method recording results. We suggest the four categories established by Müller (1936).

1 *Complete remission*—This category represents complete disappearance of schizophrenic symptoms, with normal affective relationship, full insight, and ability to return to the normal sphere of work.

2 *Incomplete remission*—This category includes patients who are able to work but with persistence of any one of the psychic symptoms described under 1.

3 *Partial remission*—Patients in this category are able to resume work, symptoms remain without interfering with their daily life.

4 *Unimproved*, and requiring hospital care.

CONCLUSION

It seems likely that this method will be given an extensive trial in this country, and it is clearly of the utmost importance that fresh workers, or those already engaged on this work, should make a serious attempt to coördinate and standardise not only the technical side of a difficult and laborious procedure but also the criteria of diagnosis by which cases are selected, and the classification of results. It is hardly necessary to enlarge on the advantages gained from such standardisation. First, the undoubted dangers of the procedure will be minimised by the adoption of the proved technique. This is not meant to imply that no modifications are possible, they are bound to be tried. But in applying a method of treatment that is not without danger to life, it seems to us wise to follow closely a technical procedure already fully tested in Vienna, Munsingen, and elsewhere. Secondly, if it is possible to arrive at agreement on the criteria of diagnosis, the cases selected for treatment will command a general acceptance as properly belonging to the schizophrenic group of mental disorders. Thirdly, agreement on classification of results will enable a quicker judgment to be made of the real value of the new method.

REFERENCES

- Küppers, E. (1937) *Disch. med. Wschr.* 10 377.
 Larkin, E. H. (1937) *Brit. med. J.* 1 745.
 Meduna, L. (1937) *Die Konvulsionstherapie der Schizophrenie*. Halle a/S.
 Müller, M. (1936) *Schweiz. med. Wschr.* 39 920.
 Russell, L. W. (1937) *Lancet* March 27th p. 747.
 Sakel, M. (1935) *Neue Behandlungsmethode der Schizophrenie*, Vienna.
 — (1936) *Wien. klin. Wschr.* 42 1.
 Wilson, I. G. H. (1936) *Study of Hypoglycæmic Shock Treatment in Schizophrenia*. London.

TREATMENT OF URINARY INFECTIONS WITH CALCIUM MANDELATE

By EDGAR SCHNOHR, M.D.

(From the Surgical Department at the Sundby Hospital, Copenhagen)

MANDELIC acid has been widely used in the treatment of urinary infections since Rosenheim introduced it in 1935, and the results published have all been excellent.

I have treated 30 patients with sodium mandelate and ammonium chloride as originally advised by Rosenheim, and found that in 23 the urine was sterile after 4-30 days, although several were severely ill, some with stones and urinary stasis. The only disadvantage of the treatment is that mandelic acid

has a very disagreeable taste and not infrequently causes nausea and vomiting. For some patients the dyspeptic discomfort was enhanced by the ammonium chloride and occasionally the treatment had to be given up. This led me to try the calcium salt of mandelic acid which unlike the sodium and ammonium salts is quite tasteless. The preparation used* has the following constituents—

Calcium mandelate	72.25
Cocoa powder	7.50
Saccharum purificatum	20.00
Saccharinum solubile	0.02

It is in granular form and one level dessertspoonful contains 2 grammes of mandelic acid. In the stomach calcium mandelate is broken down to mandelic acid and calcium chloride most of which is converted into non absorbable calcium salts in the intestines. This gives a surplus of mandelic acid. Since a part of the administered calcium is absorbed together with the mandelic acid, the calcium mandelate will have a less pronounced acidifying effect than ammonium mandelate the all ammonia of which is converted into urea. I have found however that with calcium mandelate it is possible to obtain a sufficiently acid urine. The values of pH obtained have corresponded exactly with those following administration of sodium mandelate with ammonium chloride or of ammonium mandelate.

The results of treatment in 8 cases are summarised in the accompanying Table.

Result of Treatment with Calcium Mandelate

No. of Case	Sex and age	Duration of infection	Diagnosis	Days before urine became sterile	Lowest pH during treatment
1	F 41	2 cols 5 yrs	Pyelitis	4	1.9
2	F 29	2 cols 3 yrs	"	4	4.8
3	F 6	2 cols 1	Pyelitis, polypus vesicae, cholelithiasis, cholecystitis	0	4.8
4	F 57	2 cols 4 yrs.	Pyelitis, uretero lithiasis	8	5.1
5	F 51	Hæmaturia 1 mth.	Cystitis; pregnancy	3	5.5
6	F 35	2 cols 1	Pyelitis, chronic salpingitis, cystitis, degenerated ovaries	6	5.0
7	F 33	2 cols 8 days	Pyelitis, nephrolithiasis, dilatation of pelvis	Crystal clear within 10 days	5.3
8	M 51	2 cols 3 yrs	Pyelitis, nephrolithiasis, dilated calyces and ureter stone in the lower urethral stricture	After 10 days no growth of <i>B. coli</i> continued growth of <i>proteus</i>	5.5

Case 5 was given 6 grammes of mandelic acid daily for the other 12 g.

With all the reservation necessary when comparing groups of 30 and 8 patients I must nevertheless express my opinion that the infection of the urinary passages was if anything more serious in the 8 patients who received calcium mandelate than it was in those who received sodium or ammonium mandelate. And the therapeutic result was at least equally

satisfactory. It is especially worth noticing that the urine became sterile in Case 4, in which pyelitis was complicated by the presence of an ureterolith and dilatation of the urinary passage. The same thing happened in Case 7 where there was nephrotosis dilatation of the pelvis, and a kink in the ureter. In Case 3 where pyelitis was complicated by polyp in the bladder a month's treatment with sodium mandelate plus ammonium chloride had no effect on the infection yet after giving calcium mandelate for nine days the urine was sterile. It is hard to see how the calcium salt could be more effective than sodium mandelate plus ammonium chloride when—as in this patient—the acidity of the urine is identical and it is easiest to assume that continued treatment with sodium mandelate would have given the same result, though sterility of the urine is seldom so long delayed. If there is a therapeutic difference, it is presumably attributable to some action by the calcium ion itself on the infection.

Regarding the question whether it is justifiable to give mandelic acid in cases of renal insufficiency I would point out that three weeks previously this patient had had serious renal insufficiency with temporary anuria and greatly increased blood urea—a condition I suppose of azotémie par manque de sel. The mandelic acid did not in any respect impair the function of the kidney.

Of the two patients whose urine did not become sterile the first (No 7) had bilateral nephropoiesis, dilatation of the pelvis and a kink in the ureter. On the tenth day (when this report was brought to a close) the urine was as clear as crystal but still gave a scanty growth of *B. coli*. In Case 6 there was associated infection by *coli* and *proteus* also there was a stricture of the urethra retention of urine dilatation of the calyces and the pelvis on one side and a concretion in the pelvis—conditions which make it unlikely that cure will be attained by medical means. The *proteus* infection did not respond to the treatment but on the other hand the *coli* disappeared within ten days.

All 8 patients who were given calcium mandelate agreed that it had no taste and in 5 of them it caused no dyspeptic symptoms whatsoever. Among these patients was No 3 who had previously had sodium mandelate and ammonium chloride which made her vomit.

Of the 3 patients who had nausea after calcium mandelate No 6 had no dyspepsia when she took the medicine between meals and washed it down with water. No 7 was only nauseated for the first two days and No 8 not until six days had passed. In no case was it necessary to stop the treatment because of dyspepsia. Thus there can scarcely be any doubt that calcium mandelate has a great advantage over treatment with sodium mandelate and ammonium chloride.

SUMMARY

A new preparation in which mandelic acid is presented as the calcium salt has been tried in the treatment of urinary infection. It is tasteless seldom causes dyspeptic symptoms and gives a sufficiently acid urine.

Treatment of 8 patients with this preparation gave the same good results as treatment with other preparations of mandelic acid.

I am indebted to Prof. Svend Hansen, chief of the surgical department of the Sundt Hospital, for permission to report these cases.

* It was placed at my disposal by the Ferro-an Co., Copenhagen and is sold by them under the name of Camydal and is obtained in Great Britain from H. H. Napp Ltd., London.

CORNEAL GRAFTING (KERATOPLASTY)

REPORT OF A CASE

By T H SPENCER TIZZARD, M B Glasg, D O M S

HON SURGEON TO THE EYE INFIRMARY, BATH

CORNEAL grafting was first successfully practised as long ago as 1888 by von Hippel. His method was to use a mechanical trephine, which is, however, a difficult instrument to control, and liable to inflict severe damage. The same method has been used by Elschnig. Castroviejo (1934) employs a twin bladed knife which cuts a rectangular graft, thus he retains in position by means of a conjunctival flap. Tudor Thomas (1930, 1931) obtains his graft by using a circular trephine of just over 4 mm in diameter. In his method the cornea is cut with the trephine as far as the deeper layers, and he then uses a pair of finely curved bevelled scissors to cut the remaining portion. This shelving process prevents the cornea from becoming dislodged and slipping into the anterior chamber. The recipient's eye is trephined in the same way, but the instrument is of a slightly larger diameter. Thus the graft can be more easily slipped into the bed. It is retained in position by an ingenious method of cross stitching.

To retain the graft in position Castroviejo draws the conjunctival flaps together over the graft by undermining the conjunctiva from the limbus backwards above and below. Rycroft (1935, 1936) employs a complete conjunctival flap, which is drawn like a tent over the entire cornea and the graft, and retained in position by a purse string suture.

INDICATIONS

Cases of grafting are done in which opacification of the cornea is due to interstitial keratitis, healed ulcers, and chemical burns. In interstitial keratitis the eye should have been quiet for at least twelve months.

Cultures should be taken from the conjunctival sac of the donor and the recipient. The operation is contra indicated if any pathogenic micro-organisms are grown during forty eight hours' incubation. Tension should be within normal limits. There should be accurate projection of light and there must be no active inflammation.

CASE REPORT

The following case is that of a young man of 21 who two years previously had very severe interstitial keratitis involving both eyes.

The patient first attended the Eye Infirmary, Bath, in the summer of 1935. Both corneas were opaque. In the right eye there was perception of light, in the left of hand movements. The pupils were fully active, but it was not possible, owing to the diffuse corneal opacities to view even a portion of the fundi through the dilated pupil. It was noted that there was an anterior capsular cataract in the left eye, but owing to the density of the corneal opacities in the right eye I was unable to see whether there was a similar cataract in this eye. He had had 18 months previously a full course of Novarsenobillon, extending over six months at another eye hospital. As interstitial keratitis can recur, a very small peripheral iridectomy was performed on the right eye, the object being to see how it reacted. The eye remained perfectly quiet after the operation. Since vision in the right eye was less than in the left vision being so poor that it was useless as an organ of sight, I decided to do the corneal graft if possible on this eye. During the time he was in the infirmary in 1935 he was given mercury and iodide.

It was not until the summer of 1936 that a suitable eye was found from which to take a graft. The cornea for grafting purposes should be quite transparent and clear and of normal thickness. I considered that a cornea taken from a glaucomatous blind eye would be unsuitable, as it would have been subject at some time to abnormal stresses. The eye that became available was taken from a man who was hit with a piece of steel, disorganising the interior of the eye, but leaving the cornea in part uninjured.

OPERATION

The evening before operation the palpebral conjunctiva was painted with 2 per cent silver nitrate, and afterwards irrigated with an alkaline lotion. Gut eserin $\frac{1}{2}$ per cent was instilled into the right eye. The morning of the operation gut eserin $\frac{1}{2}$ per cent was again instilled into the right eye.

The recipient's eye was anaesthetised with Pantocain, a derivative of novocain that has no deleterious effect



Right eye before and three months after, operation

upon the corneal epithelium and no effect on the pupil or intraocular pressure. The 7th cranial nerve was blocked with Novutox at the site where its branch crossed the neck of the condyle of the mandible. Complete paralysis of the orbicularis oculi was secured with an injection of 2 cc cm.

Preparation of the site in the recipient's eye was first begun. The conjunctiva was dissected from the limbus in its whole circumference, and the conjunctiva was undermined and freed from the underlying tissue, so that it could be drawn over the cornea by a purse string suture. Bleeding points were few and were easily controlled by adrenaline, and there was no need to use a cautery. The site of the graft was delineated by placing a trephine (4.63 mm) over the centre of the cornea and cutting through the epithelium. The trephine was removed and a drop of sterile fluorescein was placed on the cornea. This outlined the graft. When the section had involved half the thickness the trephine was slightly tilted to one side so that the cutting edge was directed obliquely through the deeper layers of the cornea. The anterior chamber was thus entered. The trephine was removed and the section was completed by dividing the remainder of the cornea with a pair of scissors whose cutting edges were bevelled.

The corneal graft from the donor's eye was removed in the same way, but with a trephine of 4.5 mm so that the piece of cornea could easily fit into the bed prepared. The corneal graft was removed by sliding a retractor beneath it and placing it in a watch glass filled with sterile normal saline and little above body temperature.

The bed for the graft having been prepared, very little time was lost between removing the graft from the donor and placing it in its new bed. The conjunctiva was now drawn completely over the graft and the cornea the former being kept in position by an oiled retractor which was placed through a small hole underneath the "tent" so to speak, and held gently on the surface of the cornea, while the purse strings were drawn tightly over it. One now felt that the graft was really in position and had not been dislodged when drawing the conjunctiva over it. Atropine oil was instilled and both eyes bandaged firmly.

PROGRESS

On the fourth day the bandages were removed and one drop of atropine oil was instilled into the operated eye. The graft at this time could not be seen as it was still completely covered with conjunctiva. The patient complained of no pain or discomfort. The eyes were again firmly bandaged. On the sixth day the bandages

were again removed and the graft was seen in position and it was quite clear and transparent. Through it could be seen the white opaque lens capsule resting on the deep surface of the graft. By the tenth day the graft had taken, but it did not appear as clear and transparent as before around its periphery. The graft appeared to be going opaque but there was a clear area in the centre. The patient complained of pain. Atropine oil was instilled and the eye firmly bandaged. As the tension remained +1 atropine was discontinued three weeks after the operation. Now the graft began gradually to clear. The tension however remained high for a further two weeks when it slowly returned to normal. The whole of the time during which the tension was raised the eye was firmly bandaged. Three weeks after the operation the patient was able to count fingers two feet away. At the present time vision remains the same and the graft is transparent.

COMMENTS

The method employed in this case has to my mind one great advantage. The conjunctiva when drawn over the graft brings nourishment through the lymph channels to the graft in the first few days when

the graft is taking. At the same time the conjunctiva protects the corneal epithelium from damage. The one great disadvantage is that when one has drawn the conjunctiva completely over the cornea and graft one is not sure that the graft has not been entirely dislodged from its bed or that it has not been even slightly tilted.

In a case of interstitial keratitis or in fact in most eye operations, iritis is likely to be produced. Atropine by dilating the pupil prevented anterior synechia.

The graft having remained clear I propose at some future date to extract the right lens.

This case was shown at the South Western Ophthalmological Society's meeting in December last.

REFERENCES

- Castroviolo R. (1934) *Amer. J. Ophthalm.* 17 632
 Eichenkrantz A. (1933) *Ibid.* 6 988
 Hirschfeld D. (1936) *Lancet*, i 339
 — and Handelsman G. (1935) *Brit. med. J.* i 210
 Thomas, J. W. T. (1933) *Trans. ophthalm. Soc. U.K.* 50 1
 — (1931) *Ibid.* 51 87
 — (1933) *Proc. R. Soc. Med.* 26 597
 — (1935) *Trans. ophthalm. Soc. U.K.* 55 373

CLINICAL AND LABORATORY NOTES

AN ABNORMAL LARGE INTESTINE
ENCOUNTERED DURING APPENDICECTOMY

By JOHN ALEXANDER MACKENZIE, Ch.M. Aberd.

SURGEON TO THE VICTORIA HOSPITAL, BURNLEY AND
TO THE HARTLEY HOSPITAL, COLNCE

ON Sept. 3rd, 1930 I was called to the Victoria Hospital Burnley by my house surgeon to see an acute abdomen.

The patient was a labourer aged 29 married with two healthy children. His mother had died of cancer at 36; his father was alive and well and his brothers and sisters healthy. Up to the age of 14 he had "incontinence of feces"; from 14 to 16 he was troubled with diarrhoea but from 16 to the present date he had been quite healthy. He was well built and healthy looking. He had a mitral murmur due to valvular incompetence but he was unaware of it and the condition had never given him any trouble. The urine was normal.

The temperature was 101 F the pulse-rate 120 and the patient had every classical symptom and sign of acute appendicitis. I operated at once and on opening the abdomen by a right para median incision was confronted with a much dilated large intestine which on tracing upwards went up below the liver and on tracing downwards went over the right side of the brim of the pelvis to form the rectum. I discovered the caecum behind this and partly covered by it.

reaching down to within an inch of the brim of the pelvis, while the peritoneum covering this large intestine shaded off from its mesentery over the caecum, covering it and fixing it down. At that point I could find no trace of the appendix, although the bowel showed inflammation. No small intestine was visible; but passing my hand in front of this dilated part of large intestine over to the left side I found all the small intestine congregated there and by tracing it found where it entered the caecum behind this dilated large intestine. On splitting the peritoneum where the small intestine joined the caecum in the acute angle pointing towards the umbilicus I found a small and acutely inflamed appendix which I removed. I resutured the peritoneum where I had split it and closed the abdomen as quickly as I could because the man was desperately ill.

The patient made an uninterrupted recovery and was later examined by barium meal. Fig 1 shows the barium leaving the stomach and making for the left side of the abdomen where the whole of the small intestine is collected. A second radiogram showed



FIG 1.—Radiogram after barium meal. Small intestine seen on right of abdomen.

FIG 2.—Barium meal filling the colon.

the meal entering the caecum behind and at the upper angle where the entrance was the dilated appendix was situated. It could also be seen passing up the ascending colon and into the transverse colon. A third radiogram showed the meal coming down the descending colon to the normal sigmoid flexure but when it reached the brim of the pelvis it

suddenly changed its mind and ascended transversely across the abdomen to the hepatic flexure, lying in front and covering the original hepatic flexure and descending in front and a little to the left of the caecum where it entered the pelvis on the right side to become the rectum. Fig 2 was taken after a barium enema and shows the splenic flexure and transverse colon also. In all the radiograms a large gland could be seen to the left of the vertebral column.

I have often found the sigmoid and rectum on the right side of the pelvis, especially in women, and in all these cases there has been a well marked mesentery. But I have never seen or read of any case like this, nor have I seen any developmental theory to explain it. Possibly the condition was the cause of the incontinence of faeces in early life.

I am indebted to Dr James Grieve, radiologist to the Victoria Hospital, for preparing radiograms for me.

CONTINUOUS VENOUS HUM IN CIRRHOSIS OF THE LIVER

By J L BATES, M.B. Lond.

RESIDENT PHYSICIAN, RUTHIN CASTLE, NORTH WALES

THE comparative rarity of a venous hum in cirrhosis of the liver and the question of its causation gives interest to the following case.

A man, aged 53, was admitted on March 11th, 1936, to Newcastle General Hospital under Prof. Thomas Beattie for swelling of the abdomen, noticed ten days previously, and dyspnoea on exertion. His increasing pallor and occasional attacks of giddiness had begun four months previously when he was obliged to give up his work as a turner and fitter. He had recently suffered from flatulence and intermittent diarrhoea. There was no history of haematemesis. The left leg had been amputated in 1926 at Newcastle Royal Infirmary for chronic osteomyelitis following a war injury. At the same time a blood test was performed and he was thereafter given a course of injections. He used to be a heavy beer drinker.

The patient was well built but appeared to have lost weight recently. The abdomen contained much free fluid and dilated veins were visible in both loins but not around the umbilicus. The distension made palpation difficult. Liver dullness not increased. Spleen not palpable. No cardiovascular abnormality. The pupils were equal but did not react to light. On auscultation of the abdomen, there was a continuous, loud, high pitched bruit with systolic and inspiratory exacerbation. This was heard only over an area the size of half a crown just below the xiphoid process.

Investigation.—A blood count showed red cells, 2,340,000; white cells 3200; haemoglobin, 20 per cent; colour index, 0.4; reticulocytes, 3 per cent. Blood urea 35 mg per 100 c.c.m. Urine contained a trace of albumin and occasional pus cells. Blood Wassermann, weak positive. Radiography of stomach and duodenum gave no evidence of ulcer or neoplasm. Occult blood test negative.

Treatment.—The patient was tapped on seven occasions between March 12th and June 5th. Small quantities were obtained at first but later up to 18 pints were withdrawn at a time and the ascites still increased. Shortly after admission he was given a blood transfusion which raised the haemoglobin to 50 per cent. He was given iron without visible improvement and later mercury and potassium iodide.

Various explanations have been offered to account for the bruit. Rolleston and McNee (1929) cite examples ascribed to dilatation of the coronary vein or a dilated communication between the internal mammary and radicles of the portal vein. Other authors have postulated an arteriovenous anastomosis which has not been substantiated post mortem. Rolleston and McNee also describe a case of con-

tinuous epigastric bruit in which post mortem examination showed cirrhosis of the liver and a thin walled vein in the falciform ligament as big as one's little finger. In a case described by Lutembacher (1936) the bruit was strictly localised in the xiphoid region and occurred in a syphilitic subject. In Florand's case it was of more widespread distribution and was audible posteriorly. Autopsy revealed a varicose plexus between the internal mammary veins and a persistent umbilical vein. Martini (1893) described a soft murmur over the liver near the right axilla which he ascribed to compression of the inferior vena cava.

Venous hum has been found in Hynd's cirrhosis and Banti's disease and has occasionally been heard only below the umbilicus or above the costal angle. The bruit may be compared with that heard in the left anterior axillary line in some cases of splenic enlargement. In the case outlined above I have tried to find the most probable explanation, taking into account the rarity and the strict localisation of the bruit. One factor may be the associated anaemia, but the transfusion had no effect on the murmur. If it were due to hyperplasia of the para-umbilical veins one would expect to hear it best over the "caput medusae," but the bruit was not heard at all over the umbilicus. It was not influenced by abdominal paracentesis. This suggested that the cause might be intrahepatic rather than lying in the anterior abdominal wall. Its rarity suggests its dependence on extreme hepatic fibrosis, which would be made more likely by the coincident specific infection.

A consideration of the "bruit de diable" heard where the jugular veins pass through the deep cervical fascia makes it seem probable that a venous bruit is caused by the passage of blood through a constricted lumen into a relatively dilated channel. The murmur in this case was heard at about the level at which the vena cava pierces the diaphragm. The vena cava is adherent to the margin of this opening and just below this the vessel receives the hepatic veins. I believe that the bruit is caused by stenosis of the vena cava by the perivenous hepatic fibrosis. The blood has to pass through this constricted part of the vena cava before entering the wider diaphragmatic hiatus.

I am indebted to Prof. Beattie for permission to publish this case.

REFERENCES

- Florand quoted by Rolleston
Lutembacher R. (1936) *Pr. med.* 44 847
Martini quoted by Rolleston
Rolleston H. D. and McNee J. W. (1929) *Diseases of the Liver* London p 267

PROGRESS AT THE MIDDLESEX HOSPITAL.—Prince Arthur of Connaught speaking at a court of governors of this hospital said that the work was increasing in every direction including that of cost. It was not possible owing to lack of funds to open to the full extent of the institutions 700 beds but 592 were at the public service and in patients numbered 9821 in 1936. The cost of the hospital and cancer wing was approximately £186,000 as against £106,000 a dozen years ago.

BEQUESTS TO HOSPITALS.—The late Mr. Caleb Diplock of Polegate, Sussex, has left many charitable bequests. Those to hospitals include £20,000 to Guy's Hospital, £8000 to St. George's Hospital, £5000 to the Royal National Orthopaedic Hospital, £4000 each to the Westminster Hospital and the London Hospital, and to the Middlesex Hospital. St. Bartholomew's Hospital and Charing Cross Hospital each receive £3000 and the Princess Alice Hospital, Eastbourne, £5000.

MEDICAL SOCIETIES

OPHTHALMOLOGICAL SOCIETY OF
THE UNITED KINGDOM

THE annual congress of this society was held on April 20th to May 1st under the presidency of Dr GORDON HOLMES F.R.S. who delivered an address on the

Prognosis in Papilloedema

He said that papilloedema was one of the common conditions which were a meeting ground of the ophthalmologist and the neurologist, and for academic and practical reasons concerned the practice of both. No aspect of the condition demanded more attention than its prognosis in regard to preservation of vision. Noteworthy contributions on the matter had been made to the society's Transactions particularly by Dr James Taylor and Mr Leslie Paton. The presence of papilloedema was often regarded as an immediate danger to vision and in different branches of the profession there was a good deal of misapprehension on the point. In this address the president proposed to discuss only that form of papilloedema which was associated with increased intracranial pressure leaving aside its diagnosis. The condition was now recognised to be essentially an oedema of the nerve head in which—for a time at least—there was little structural damage or functional disturbance of the nerve elements though these might be strangled and destroyed by overgrowth of interstitial tissue when the oedema subsided into atrophy. In the latter stage recovery of vision could not be expected. The essential aetiological factor in papilloedema was increased intracranial pressure therefore relief of that pressure would lead to a disappearance of the condition and so remove the risk of blindness or serious visual deterioration if the relief could be given before the development of secondary changes in the disc. Often there were cogent reasons against immediate operation. If the cause of the condition was a tumour its removal was frequently impossible especially if it were an extensive infiltrating one of the glioma type. In that kind of case operation quite often reduced the length and utility of life. Moreover operation even in the most skilled hands entailed considerable risk to life. To the question of how long measures for relieving pressure could be delayed without endangering vision no general answer could be given. Even intense oedema might not cause any disturbance of vision as was emphasised by Hughlings Jackson 48 years ago. Vision indeed might remain unimpaired for long periods. In rare cases the papilloedema subsided without surgical intervention or other specific treatment and vision remained unaffected. In most of these cases it was impossible to ascertain the exact nature of the condition to which the papilloedema was due. In some there might be a tuberculous or gummatous tumour which became quiescent or a glomatous growth which degenerated but intracranial hydrocephalus was probably responsible in many of them for the raising of intracranial pressure. In others there might be an external hydrocephalus or a serious meningitis.

In most cases of papilloedema relief of intracranial pressure was necessary or soon became so in order to save sight and the important question arose of recognising the time when further delay was dangerous. The more rapidly the congestion and swelling of the optic

disc developed the more intense did the papilloedema become and the greater the danger to sight if no relief were undertaken. A swelling of 4 or 5 diopters was a warning against undue delay. Equally serious was great engorgement of retinal veins and early and extensive hæmorrhages on the surface of the swollen disc. An even more important danger was a narrowing of the arteries in the swollen disc and its vicinity. Frequent examination should be made in order to evaluate the fundal changes and detect the earliest signs of secondary atrophy. A further serious sign was the transient loss of sight complained of by many patients. This might follow sudden changes of posture. If the tumour or other cause of the increased pressure could not be removed by extirpation a decompression craniectomy usually caused subsidence of the congestion in from two to four weeks and if secondary changes had not appeared by then there was no further risk of impairment of vision.

Papers were read by Mr R. FOSTER MOORE and Mr J. COLE MARSHALL on the

Treatment of Retinal Detachment

Mr Foster Moore's communication summarised some observations on the technique of karyolysis in the treatment of retinal detachment and on the early results obtained in 31 cases. The object of the procedure was to produce coagulation in the choroid as the result of the liberation of sodium ions at the negative terminal inserted through the sclerotic at the same time hydroxyl ions were set free. The apparatus he used was made by Messrs Hamblin; the needles were either straight or bent at a right angle. The length of the active part of the needle varied from 1 mm. upwards; they were made of platinum-iridium. The best strength of current he had found to be 5 milliamperes, usually he passed it for six seconds. An almost unlimited number of punctures could be made even though the eye might be rather soft. The flaccidity might make subsequent trephining difficult. Bubbles of gas were seen at the site of the puncture from which there was always some escape of fluid when the escape was free no additional exit was required for the subretinal fluid. But it was better to make a definite hole by trephining or with the galvanocautery. Of the 31 cases, 14 were myopic. In 12 of them the retina was replaced and remained in position when last the patient was seen. 2 were discharged slightly improved, 4 much improved, 9 not improved. But the longest period since the treatment was not more than twelve months and in many of them only a few weeks. The advantages of the method were that the apparatus was light portable and easy to use. Its effects were sharply localised and less damage was done to intra-ocular tissue than with diathermy. It was unnecessary to divide the muscle unless exposure was needed of the sclerotic far back. The crucial test however was not in how many cases the retina went back, but in what proportion the replacement was permanent. To that question he had at present no answer.

Mr Cole Marshall said that in karyolysis the whole length of the needle was active not only its base. A keratiti was formed and a retinitis round the region where the bubbles had been liberated which might subsequently cause changes in the choroid. Mr Foster Moore appeared to retain the needle in the eye longer than did most continental operators and to use a slightly stronger current. Karyolysis

was not only a good localising agent but a good adjunct to diathermy scarring. Mr Marshall had found katholysis very beneficial in conjunction with diathermy, using very fine needles for the latter. The transillumination method described by Weve he regarded as very important, as also was the continuous use of saline during the operation, this being applied every minute.

On April 29th a discussion on

Exophthalmic Ophthalmoplegia

was opened by Dr W. RUSSELL BRAIN. He said that in this condition exophthalmos and ophthalmoplegia might be either unilateral or bilateral. General symptoms of thyrotoxicosis, usually slight, might be present if the condition arose spontaneously, if it followed thyroidectomy for hyperthyroidism such symptoms were often absent, the basal metabolic rate being normal, or even subnormal.

The separation of exophthalmic ophthalmoplegia as a syndrome from exophthalmic goitre depended on a number of features, the most important of these being that it might occur after operation not only in the absence of thyrotoxicosis but in the presence of actual hypothyroidism. It also differed from Graves's disease in its age incidence and its sex-incidence, in the usually slight degree of the thyrotoxic symptoms when present, in the usual lack of response to thyroidectomy, and in the somewhat atypical histological picture in the thyroid. Exophthalmic ophthalmoplegia was a disorder of middle age. The mode of onset was usually subacute, one eye became increasingly prominent over a period of three to four months, the ophthalmoplegia and the double vision developing concurrently. Generally the other eye lagged behind in the matter of proptosis, and might not exhibit ophthalmoplegia at all. Both exophthalmos and ophthalmoplegia might develop simultaneously in both eyes in three or four months. Exophthalmos was present in all Dr Russell Brain's cases: unilateral in 5, bilateral in 24. Among the latter the degree of exophthalmos was equal in 8, unequal in 16. An asymmetry of the eye protrusion was present in 21 out of 29 cases. The ophthalmoplegia was a paresis or paralysis not of individual extraocular muscles but of movements of the eye in a particular plane. In the 12 unilateral cases, elevation was the movement most often affected; in the 17 bilateral cases abduction was affected 31 times, elevation 23 times, depression 18 times, adduction 17 times. In 6 patients all movements of both eyes were affected. Widening of the palpebral fissures with retraction of the upper lid was the usual finding in both unilateral and bilateral cases, but ptosis was present on both sides in 5 cases, and on one side in 3 cases with bilateral ophthalmoplegia. With regard to the pathology of the ocular muscles the changes consisted of marked oedema, with foci of lymphocytic infiltration, and, in later stages, fibrosis. In one portion of levator palpebrae superioris removed at operation Prof H. M. Turnbull found general oedema and great enlargement of muscle fibres. In 4 out of 5 cases sections of the thyroid gland examined by Prof Turnbull showed that the gland was atypical, and in the other case the gland was the same as in Graves's disease.

The usual treatment given for exophthalmic goitre had been, in his experience, disappointing when applied to exophthalmic ophthalmoplegia. Thyroidectomy was done in 4 cases. In one of them there was distinct general improvement and considerable improvement in the condition of the eyes though some ophthalmoplegia remained. Following orbital

decompression there occurred an immediate recession of the eye, but the ophthalmoplegia remained unchanged in one case and was only moderately benefited in the other two. Dr Brain looked forward to the day when the condition could be dealt with in a more physiological manner than by surgery.

Prof. F. R. FRASER gave a general survey of the similarities between toxic goitre and myasthenia gravis and said that he had been able to test the effect of prostigmin on two patients with toxic goitre. The first was a woman aged 41, who had begun to show signs of toxic goitre—tremors, palpitation, and marked sweating—at the age of 26. A year later she developed exophthalmos, more marked on the right side, diplopia, and a pronounced ptosis of the left upper eyelid. The ophthalmoplegia progressed rapidly and interfered with her work as a teacher. The drooping of the eyelid became more marked towards the end of the day, and at the end of the school term the diplopia was much more severe. In 1925 ophthalmoplegia definitely improved after partial thyroidectomy, and the ptosis improved so much that she could resume teaching. The tachycardia and tremors, however, never disappeared. She was accordingly treated with prostigmin (2.5 mg.), a large dose whose possible upsetting effects were countered by atropine administered some 20 minutes beforehand. Four minutes after giving the prostigmin there was improvement in the upward vertical movement of the right eye, in a few minutes the axes of the eyeballs became parallel on looking straightforward, there was a twitching of the orbiculars, and diplopia was only present when the patient looked above the horizontal. Seventeen minutes after the injection diplopia was only to be found on extreme upward elevation of the eyes. At that stage the patient began to go back a little, as diplopia could be elicited more easily, and after half an hour the axes were again deviated. She said that during the rest of the evening her eyes were stronger. A week later a similar dramatic result was achieved. The second patient was also a woman aged 41, whose toxic goitre had developed 9 years previously, beginning with a feeling of weariness. A year later exophthalmos was noticeable, without severe toxicity. Then diplopia appeared. Thyroidectomy was carried out in 1930, and since then the ophthalmoplegia had remained stationary. During the last few years the patient had been treated with thyroid because of lassitude and general depression, and in the last year the exophthalmos had become more pronounced than ever before. Prostigmin had no effect. The difference in results in these two cases suggested, Prof Fraser said, a different pathology, or that the disease process in the second patient had so progressed that it could not respond.

Mr H. B. STALLARD also described a case of exophthalmic ophthalmoplegia in a man aged 31 in whom the thyrotropic hormone of the anterior lobe of the pituitary stimulated the thyroid gland, increasing the exophthalmos, and causing typical thyrotoxic manifestations.

The PRESIDENT said that in a certain proportion of cases of proptosis of the eyes there were very few other symptoms of thyrotoxicosis, notably the pulse rate was not increased. Possibly there were three types of case. Prof Fraser had shown that different reactions might follow the use of prostigmin, thus indicating two classes, and he had seen instances of a rarer condition characterised by definite weakness

of some of the ocular muscles with rapidly developing exophthalmos some subluxation of the globe had been described in cases of thyrotoxicosis. He considered that the transient palsies were due to a sudden stretching of the muscles due to mechanical causes in the orbit itself. As to pathology Sir William Gowers had referred many years ago to the possibility of a primary degeneration of the cells occurring in these cases. Vigor demonstrated leucocytic infiltrations in myasthenia gravis; but Mr Stallard had said the muscle fibres in his case did not show pathological change. The question whether there was a change in the nervous supply of the muscles had not been answered. In ophthalmic ophthalmoplegia there was some variability of the symptoms several patients said their ocular movements were fuller in the morning than when they were tired at the end of the day. This exhaustibility of ocular movements brought these cases more into line with myasthenia gravis as Prof Frazer had said.

The Nettleship Medal

During the congress the President presented the Nettleship Medal to Mr H B Stallard, particularly for his work on the treatment of glaucoma of the retina by radium emanations.

GASTRO ENTEROLOGY WEEK IN FRANCE

The International Society of Gastro-enterology has organized its second congress which will take place in Paris during the Universal Exhibition on Sept 13th, 14th and 15th under the presidency of Prof Pierre Duval (Paris). The subjects for discussion will be early diagnosis of cancer of the stomach and it will be dealt with by French and German speakers. The collected reports of the French contributors will be presented by Prof Duval and Prof Goesset with the collaboration of Prof Carnot (clinical and serological diagnosis) Dr Gutman (radiology) Dr Moutier (gastroscopy) Dr Garin (photographic gastroscopy) Prof Labbé (chemical diagnosis) Dr Yvan Bertrand (pathological histology) and Dr Gatellier and Dr Charrier (operative diagnosis). Prof Konjetzny will present the collected reports of the German contributors with the collaboration of Prof Sauerbruch (surgery) Prof Buerger (chemical diagnosis) Prof Berg (radiology) Prof Henning (gastroscopy and gastrophotography) and Prof Stammier (pathological anatomy). The second subject for discussion will be intestinal obstruction and Dr Mogana (Spain) will deal with it from the medical side. Dr Bottin (Belgium) from the physiopathological, Dr Kryzski (Poland) from the radiological, Sir David Wilkie (Great Britain) from the surgical and Prof Blindo de Vecchio (Italy) from the pathological-anatomical.

At the end of the Paris congress the International Congress on Liver Insufficiency will meet at Vichy on Sept. 16th, 17th and 18th under the presidency of Prof Loeper. It will have a medical and a therapeutic section and the subjects for discussion will be hepatic oedema, the malarial liver, enlarged liver in children, sulphur metabolism, the liver from the point of view of surgical intervention, and hepatic drugs.

Dr A F Hurst is president of the British committee of the society and Dr T G Hunt 49 Wimpole-street London W 1 is the hon secretary.

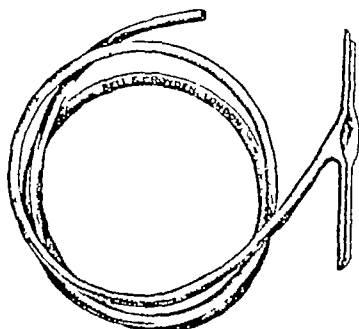
JOURNÉES MÉDICALES INTERNATIONALES DE PARIS
A conference organized by the Revue Médicale Française will take place in Paris on June 20th to 30th and will discuss the biological, clinical and therapeutic action of hormones. The itinerary includes sessions at which papers will be read and visits made to appropriate centres. Communications from those requiring detailed information should be directed to Dr Louis Lamy, treasurer of the Journées Médicales 18 Rue de Valenciennes, Paris, accom-

NEW INVENTIONS

T TUBE FOR GALL BLADDER OPERATIONS

THERE are several types of T tube for draining the common bile-duct, most of these being modifications of Kehr's pattern. During the last few years the indications for exploration and drainage of the biliary ducts have been greatly extended and this is now rarely omitted in operations for cholelithiasis as soft pigment stones, collections of biliary and inspissated pus and inflammatory debris cannot always be palpated, even when present in large amounts.

The T tube I use is the thickness of No 7 English catheter gauge and it is 25 in in length. The



transverse trough-shaped piece is 2 in long and is fitted obliquely to the tube. The soft rubber trough is easily inserted into the incision in the common duct, being securely fixed into position by stitching over it the edges of the incision in the duct by means of a few interrupted catgut sutures. The long limb of the tube is led through the abdominal wound or through a special stab wound and is anchored to the skin margin to prevent it from being inadvertently withdrawn. By means of a glass connexion which is attached to another length of rubber tubing the bile is made to drain through into a small medicine bottle which is fixed to the patient's side or to the bed. Some of the bile thus collected is returned per rectum two or three times a day. I find this tube very easy to insert into the common duct; and, what is more, it is easy to remove after it has done its work. Provided there is no obstruction in the lower reaches of the duct there is no discharge of bile through the wound after the tube has been withdrawn.

The tube is made to my specification by Messrs John Bell and Croyden Wigmore-street London W 1

RODNEY MANNING F.R.C.S. Eng.

Senior Surgeon to the Royal Waterloo Hospital and to the Southern General Hospital.

panied with the necessary fee by cheque or postal order. The fee for admission to the Congress for doctors is 100 Frs; the subscription for medical students and for the wives and children of doctors is 50 Frs. Admission will secure for the applicants admission to all the sessions and to various pleasure reunions which include a performance at the Théâtre des Champs-Élysées, a reception by the Municipal Council of Paris and an evening visit to the Louvre.

REVIEWS AND NOTICES OF BOOKS

1 **Cushny's Text-Book of Pharmacology and Therapeutics**

Or the Action of Drugs in Health and Disease
Eleventh edition By C W EDMUNDS, A B, M D,
Professor of Materia Medica and Therapeutics and
Director of the Pharmacological Laboratories in
the University of Michigan, and J A GUNN,
M.A., M.D., D.Sc., F.R.C.P., Professor of Pharma-
cology and Director of the Nuffield Institute for
Medical Research, University of Oxford London
J and A Churchill 1936 Pp 808 25s

2 **An Introduction to Pharmacology and Therapeutics**

Fifth edition By J A GUNN London Humphrey
Mifflord, Oxford University Press 1936 Pp 240 5s

1 A thoroughly revised edition of this standard work was published in 1932 when it was also brought into conformity with the new British Pharmacopœia. The eleventh decennial revision of the Pharmacopœia of the United States has made another edition desirable. The most striking change is a rearrangement in the order of the book. It is not yet possible to arrange substances used as drugs in any strictly scientific way and in whatever order they are arranged some repetition is inevitable. In this edition the simpler substances—e.g., salts and inorganic compounds—are dealt with first and the more complex substances later. On the whole, this rearrangement is an improvement on the plan of previous editions.

The book has been brought up to date in several important respects. For example, a fuller account of acetylcholine and its derivatives is given than in previous editions, and the use of derivatives of physostigmine in myasthenia gravis is dealt with. New amebicides such as Carbasone, Chumofon, and Vioform receive full discussion, and protamine insulinate is mentioned. There is in fact hardly a section which does not show signs of revision. Excellent accounts of the vitamins and hormones are given. It is curious to find no mention of the sex hormones, especially as the gonadotropic factors of the anterior lobe of the pituitary are described. A commendable change is the introduction of structural formulæ for the alkaloids and other substances where these are known. The bibliography which follows each main section has mostly been inherited from Cushny's original book although several more recent references have been added. Its value is doubtful, since few medical students are likely to refer to original papers for information and the number of references given are too few for the research worker, who is more likely to consult a larger work. The authors, however, recognise this defect and have tried to remedy it to some extent by giving as many references as possible to reviews which themselves contain a good bibliography. The book thoroughly deserves the high esteem in which it is held by teacher, student, and practitioner alike.

2 This little book is well known to examiners in pharmacology since too often it seems to be the sole source of information to which the candidates have had recourse. This fact cannot be laid to the author's charge for he indicates clearly in his preface that the book is intended only to supplement the student's lectures or reading. It is, in fact, quite unlike the usual "cram book," for brevity has been achieved by judicious selection and not by mere compression. It affords an excellent introduction to pharmacology, and when properly used for purposes of revision can

hardly fail to help the student. It can be heartily commended, too, to the practitioner who wishes to survey rapidly the changes which have taken place in recent years in our knowledge of drugs. The exhaustion of the previous edition in only two years has provided the opportunity of making minor revisions and of bringing the book into accord with the revised United States Pharmacopœia. The changes are few and the author is to be congratulated on resisting any temptation to expand the book.

Occupational Diseases

By DONALD HUNTER, F.R.C.P. London H K
Lewis 1937 Pp 122 9s

THIS book consists of a reprint from the *London Hospital Gazette* of a series of lectures delivered to the Derby Medical Society during 1935. A surprising amount of useful information on a very wide variety of industrial medical subjects is presented in a readable form. The illustrations (of which there are many) are good in themselves and excellently reproduced. The lectures were not designed for specialists in industrial medicine, although few even among experts could fail to glean valuable knowledge from them. In the first lecture Dr Hunter discusses lead, arsenic, and (very briefly) phosphoretted hydrogen, in the second metal poisonings, industrial infections, and deficiency diseases are rapidly surveyed. The third lecture deals with a wide variety of subjects, including some of the "dust diseases," the toxic gases, benzene, aniline, and the chlorinated hydrocarbons, and in the last a number of topics including cancer, dermatitis, nystagmus, Workmen's Compensation, and the prevention of industrial disease are reviewed. It is obviously impossible to deal profoundly in a little over 100 pages with so wide a field.

The book will prove especially valuable, we think, to practitioners in industrial areas or works, and certifying or examining surgeons. We must join issue with the author upon one major and a number of minor issues. The major issue concerns the diagnosis of industrial lead poisoning. To suggest that a diagnosis of lead poisoning cannot be established unless one of the toxic episodes has occurred (see p. 11) is, we believe, contrary to modern industrial medical opinion. The work of R. E. Lane and others enables a diagnosis of lead poisoning to be made before the occurrence of a toxic crisis. A falling Hb per cent, with or without a rising "punctate count," in a worker exposed to lead raises a suspicion that "absorption" is passing over into "poisoning." This suspicion becomes a certainty when these changes are well marked or can be shown to be progressive. This is a point of considerable medico-legal importance. The minor points are the following: metal fume fever is now known to be caused by other metals besides zinc (e.g., cadmium and magnesium), the "sericite" theory of the causation of silicosis rests upon a less solid basis of fact than Dr Hunter appears to suggest, the Kolar Gold miners suffer from pneumoconiosis, the clinical dictum that occupational cramps "are always associated with anxiety to get the work done in time and up to standard" would be seriously questioned in many quarters. Dr Hunter's "15 point summary" of the prevention of disease in industry must not be taken as an adequate summary of the potential contributions of industrial medicine to industry.

As we have said this book provides a useful clinical summary of that part of industrial medicine which is concerned with the diagnosis of the recognised diseases and toxæmias of occupation. We hope that it will have a wide circulation amongst industrial practitioners concerned with the prevention and treatment of these conditions.

Christian R. Holmes, Man and Physician

By MARTIN FISCHER. Springfield, Ill. Charles C. Thomas. London. Bailière Tindall and Cox. 1937. Pp. 233. 5s.

THIS is a sumptuous memorial volume in format, printing and binding. It is fortunate that the subject of the biography led a life of single minded absorption in a great ideal or the terms of eulogy would seem unduly high. Dr Christian Holmes was the centre of medical progress in Cincinnati. The son of a Danish immigrant he was 15 years old when he landed with his father in New York. He had been well taught and having considerable skill as a draughtsman he secured work at once in the designing rooms of a civil engineer. As a young man work as a self taught engineer brought him to Cincinnati and in 1879 he began to read medicine at what was then a rather primitive centre. On qualification he became resident in the Cincinnati Hospital and for the rest of his life he was connected with the institution and devoted to its development. In practice he was energetic and versatile and quick professional success enabled him to pay regular visits to the chief medical centres in Europe with the result that he took the lead in a movement for the construction in Cincinnati of a new central hospital. The details of this work—how public support was obtained and how Holmes organised a financial backing—make an interesting story and show him to have been a man of initiative, drive and perseverance. Soon a medical college arose in connexion with the hospital and in 1910 Holmes was able to claim for the students of medicine in Cincinnati that they had facilities for clinical study of a high standard, laboratories available for teaching and research and a fine corps of instructors. Christian Holmes died in 1920 having devoted 40 years to the object which he set before him almost at the outset of his career—to establish in Cincinnati a first-class medical centre.

Cytologie du liquide céphalo rachidien normal chez l'homme

By H. JENSEN (Aarhus Denmark). Paris. Masson et Cie. 1936. Pp. 168. 1r.40.

If the scope of this monograph is limited the work it describes is nevertheless important. Dr Jensen deserves thanks for carrying through a laborious task which many would find uncongenial. The book has three sections dealing respectively with the morphology, enumeration and probable function (or lack of function) of the cellular constituents of normal cerebro spinal fluid. An exhaustive account and criticism of the various technical methods for dealing with the fluid justifies the author's contention that the subject is in a state of great confusion attributable to the tendency of the cells to rapid degeneration and the consequent medley of different classifications and results according to the methods used by various observers. He himself has worked on about 500 individuals after having selected what he believed to be the best techniques and modified them for his purpose. His reasons for his choice are convincing and since he indicates

wherein they are unsatisfactory subsequent investigators are not likely to accuse him of making exaggerated claims for them. The same moderation characterises his general conclusions. He finds that there are three types of cells: (1) those resembling and possibly identical with lymphocytes; (2) larger cells resembling the large lymphocytes of the blood but probably of epithelial origin; and (3) irregularly shaped cells characteristic of the cerebro spinal fluid, whose nature and origin can only be surmised. All three are very variable in number both in different individuals and in the same individual at different times and all tend to degenerate very rapidly *in vivo* and *in vitro*. Other types of cell such as granulocytes are always the result of contamination. A count of more than 10 cells per c.mm. is pathological and between 5 and 10 per c.mm. suspicious but extensive variations below these concentrations are common and not significant. In view of the ample opportunities of the cerebro spinal fluid to pick up cellular elements from the meninges during its circulation their occurrence and number must be regarded as fortuitous in the absence of definite evidence to the contrary and no function can be ascribed to them.

Although the outcome of this study seems meagre in comparison with the amount of labour involved the monograph gives an excellent review of the subject, contains much sound and critical discussion of technical matters and has an exhaustive bibliography. It will be of distinct value to those interested especially in the cerebro spinal fluid and furnishes a much better basis than has hitherto existed from which to start pathological and diagnostic studies.

A Dissertation on the Sensible and Irritable Parts of Animals

By ALBRECHT VON HALLER. Baltimore. Johns Hopkins Press. 1936. Pp. 49. 8s.

THIS is a pleasing reprint of a minor neurological classic and its interest is much increased by an excellent introduction by O. Temkin. Originally published by von Haller in 1752 when he was professor of physiology at Göttingen it was translated into French and thence into the English version of 1755 which is here reproduced. Haller's thesis was that only those parts of the body which have nerves possess sensibility while irritability is a property of muscle. It was a clarifying conception if only because it at once aroused serious and substantial criticism. Surgeons challenged his facts—e.g. about the insensibility of pericæum—while experimentalists rightly objected to the narrow interpretation of irritability. His work was indeed a stepping stone so wobbly that it led others to build a bridge and it is now of little more than archaeological moment. The reprint has some high interest for the title page is reproduced in facsimile and shows the stamp of the Warrington Dispensary Library reminding us of the pioneers in medicine and education who brought fame to that grim town 160 years ago.

Dr Argyll Campbell and Dr J. P. Poulton have written an addendum to their book *Oxygen and Carbon Dioxide Therapy* reviewed in our issue of March 2nd 1935. It is entitled *The Oxygen Tent and Nasal Catheter* and will be supplied gratis to purchasers of the book who apply to the Oxford University Press, Amen House, Warwick Square, London, E.C.4.

MEDICINE AND THE LAW

Epilepsy and Criminal Responsibility

IN *R v Edwards* the accused was found guilty at Leeds assizes last March of having murdered his fiancée. The defence did not dispute that the dead woman met her death at the hands of the accused man. The evidence, however, showed that he and she had been on the best of terms and no motive could be assigned for his violence. It was suggested at the trial that there was a long history, from the time the accused was three years old, of entirely unprovoked attacks ending in some kind of fit or hysterical seizure involving unconsciousness. It was proved that a relative of Edwards had died of fits. The defence called two doctors who came to the conclusion that Edwards was an epileptic subject. All the medical witnesses agreed that, if the attack had been committed during an epileptic seizure, it was committed at a time when he was incapable of forming an intent. These considerations were put forward on his behalf in the Court of Criminal Appeal, with the argument that the jury should have been directed at the trial upon the question of the proof of intent, it was contended that the trial judge should have told the jurors that, if they were left in doubt whether the attack was committed during an epileptic seizure, they could not return a verdict of murder because the requisite intention would not have been proved.

Lord Hewart dismissed this argument. He regarded the defence of epilepsy as a defence of insanity, and he repeated what he has so often said before—namely, that the burden of establishing the defence of insanity is always on the defence. It is now suggested, he said, that although an inchoate defence of insanity fails and the proof of it is not made clear, it may nevertheless leave the minds of the jury in a state of flux or uncertainty, so that they can find a verdict of either "not guilty" or "guilty of manslaughter." That proposition is not the law, nor can it be permitted to undermine the well known rules in *McNaghten's case*.

Psychology in Prisons

While the criminal law thus continues to recognise at assizes and in the Court of Criminal Appeal only one species of insanity and to require strict proof of the existence of this insanity from the accused, the annual report of the Commissioners of Prisons, just issued for the year 1935 (Cmd. 5430, 2s), contains a corrective. "It would be helpful," writes the Medical Commissioner, Dr W. Norwood East, in his important contribution to the report, "if justices and police authorities remembered that the diagnosis of the mental condition of an accused person does not rest merely between sanity, insanity and mental deficiency." He then proceeds to set out the classification of psychoses encountered and identified by the medical officers of English prisons. Dr East, as his previous reports have shown, approaches with caution the psychiatric treatment of crime. Necessary and useful as it may be, he regards it as a dangerous weapon when it leads people to believe that benefits will follow although failures outnumber successes. He reasserts his view that psychiatric treatment of criminals must follow the method of science and that it has as yet produced no impressive series of carefully tested results. In the first half of the nineteenth century the phrenologists claimed that their

doctrines could be applied to analyse the nature of certain crimes and to provide a sound judgment of the appropriate punishment. After the phrenologists came the anthropologists with fresh speculations on the cause and prevention of anti-social conduct. Dr East would have us test the application of psychological medicine to criminal mentality by the same scientific method as might have exposed the inadequacy of conceptions formerly fashionable. He commits himself to the definite statement that psychological treatment is unnecessary and undesirable in the majority of criminal cases. All will not agree with him even after considering his elaboration of the following points which affect the medical profession. Sometimes a court postpones sentence in order that an opinion on the prisoner's suitability for psychological treatment may first be obtained. Then, having been furnished with medical evidence and advice which favours such treatment, the court occasionally imposes a sentence of imprisonment nevertheless. The result is that the prisoner thinks that he might have escaped prison but for the medical evidence, hostility follows, instead of coöperation. Again it sometimes happens that a defending advocate urges that an accused man requires medical treatment rather than imprisonment, medical witnesses are exploited in support of such a plea in cases which are unsuitable. Here, too, hostility is the natural sequel if imprisonment is imposed. The prisoner tries to obtain preferential treatment on the strength of the medical opinions, when this is refused, he is inclined to attribute his future conduct to medical ineptitude. Alternatively, if the court does not send him to prison, no useful purpose is served by non-effective treatment at a clinic or elsewhere. The Medical Commissioner closes his report with further significant reminders. Abnormal behaviour may be due to group conduct as well as to individual conduct. It is common experience that persons will, as members of a gang, commit offences which they would hesitate to undertake of their own motion. Such cases may more properly be dealt with by change of environment than by prolonged psychological investigation. Secondly the comfortable doctrine of self-expression gives anxiety if it discounts the value of self-control. Criminals are all too ready to avoid reality and to refuse to acknowledge their own fault. The psychologist's examination, after all, may explain criminal conduct but is not meant to excuse it. Lastly he observes that present-day psychotherapy is practised by some who have no medical or psychiatric training. Only medical experts, he reasonably contends, should assess and give evidence on the mental condition of accused persons in relation to their suitability for psychiatric treatment.

WEST CORNWALL MINERS' AND WOMEN'S HOSPITAL, REDRUTH—Commander Sir Edward Nicholl has cut the first sod of the extension to be built at this hospital. He has contributed £15,000 towards the cost. The number of beds will be increased from 57 to 91.

FUND FOR SPA TREATMENT—Miss Sophia Gifford Edmonds, London, has given the sum of £500 a year to enable poor persons living outside a radius of fifty miles from the town to obtain treatment at Droitwich Spa. The fund will be known as The Droitwich Brine Fund for the Treatment of Rheumatism. As only a limited number of patients can be accepted under the scheme, participation in it is being offered to certain general hospitals in England and Wales. The founder hopes however that in time other charitably disposed persons will be led to enlarge its scope.

THE LANCET

LONDON SATURDAY MAY 8 1937

ON CROWNING THE KING

THE KING the fountain of honour has honour bestowed on him by his people only once—at coronation. At other times he receives their gifts of honour as a tribute to the Crown. The ceremony of the Coronation serves two purposes—it brings the person of the king within range as it were by doing something to him and its traditional elaboration makes the act of more than local or topical significance. By following custom we bridge the generations and lift the immediate occasion out of the present making it—and ourselves—a part of a timeless age long and therefore solid relation between the Ruler the Head of the Family and his people. The ceremony itself satisfies the desire to express something of the mystical reverence which lies deep—often deep hidden—in the human heart. However modern our outlook however little ceremony may mean to us as individuals its value in public life cannot be denied. It helps the separate individuals in the community to identify themselves with one another by adopting the same attitude to the Ruler. The sense of relationship to other members of the community gained by making the Ruler a common ideal, is one of the factors which stabilise an empire however distant are its constituent parts. The maintenance of this common ideal cannot be achieved without effort on the part of both ruler and peoples. The ruler on his side must not be merely a remote figure head, nor may he fall below the ideal standard the people have set for themselves. The model must be both worthy and capable of being copied—it must be human. The people for their part must resist a tendency, which may at first seem harmless to over idealise or to exalt to deistic proportions those who hold positions of authority. This tendency is a legacy from childhood and is accompanied by another relic of our primitive nursery impulses—a wish to control the behaviour of the being thus exalted. Doctors have a special opportunity for observation of this in daily life when a person holds this or that parent too high above criticism he regards

himself as specially fitted to manage the affairs of the person he adores. So it is in the constitutional relationship—groups which claim to possess a superior kind of loyalty or a more mystical understanding of the true nature of the Royal heart and mind also claim as of right to interpret the Royal will. Such an attitude is dangerous to constitutional development because its arrogance is concealed behind a mask of apparently generous intentions. We have to go back to the nursery in order to understand the basis of the monarchical form of government which draws its strength from a displacement of the ties of the family—the group in which we begin our social experience—to the central government of our national life. In the much used phrase 'the King is the Father of his People' there is a profound psychological truth. The wish to reanimate in the national life the intense experience of veneration once felt in nursery life towards the father exerts a powerful influence on our social institutions.

The smooth flow of corporate life which has for the most part characterised British history in recent centuries, obscures the strong forces which lie beneath the surface. Priding ourselves rightly perhaps on bringing to public life a sturdy common sense we tend to take institutions for granted unless either they begin to fail in their purpose or an external event calls them to our notice. We have moreover found a means of preserving an equilibrium in our relations to the governing authority which other nations do not so fully employ. The political part of our emotional life is split into two—one portion is reserved for the Crown and all that it implies the other for the Cabinet. Thus even acute discontent when it arises does not destroy the whole of the sovereign power but only a replaceable portion of it—we only turn out a party government. The parliamentary system is safe so long as it does not absorb the whole of the political sentiment of the people or receive the full force of popular opposition the throne is safe so long as the cabinet is strong enough to be worth attacking. This view may help to resolve some of the difficulties of the jurists and philosophers of the past and bring them into a new alignment. Blackstone examined the royal prerogative which invests our Sovereign Lord thus all perfect and immortal in his kingly capacity. Paley remarked that these formidable prerogatives dwindle into mere ceremonies while Bagehot coming nearer to our modern views described the limits of royal power and explained its function in terms of loyalty.

In our Empire the KING is above politics, and we have in the last century been favoured with a Royal House which has understood its responsibility as that of exacting only loyalty as tribute and giving life-long service in return. A constitutional monarch is like the father of a *grown-up* family, his power depends on his behaviour. So long as that is determined by consideration of the common good he receives the devotion of his children based on their respect for one who gives them all an equal share of his good regard. The British preserve a human relationship and a family feeling for their Ruler, neither debasing him into a puppet nor turning him into a god. King GEORGE VI is the head of our family and in crowning him we honour him, our constitution, and ourselves.

OBSTETRICS IN GENERAL PRACTICE

THE Ministry of Health's report on maternal mortality is more revolutionary than may appear at first sight. It says that many women die unnecessarily through childbirth, and that if they are to be saved the first need is better midwifery. It makes a recommendation that in blunt words means this—that public authorities shall no longer pay a doctor to attend a confinement unless he is known to have special ability for the task. At present when a midwife wants medical help she has to call in whatever doctor the patient chooses, and the local authority pays. The Ministry is evidently going to propose that in future the midwife shall only be able to call a doctor whose skill in midwifery is recognised in the neighbourhood. If local authorities are to pay for pippers they will henceforth have a say in choosing them, and will ask that their tune shall harmonise with what is being played by the rest of their orchestra, consisting of midwives, consultants, and hospital officers. The new Midwives Act and the new training rules of the C.M.B. will secure greater efficiency from midwives by providing better trained, better organised, and fully employed women. The local authorities under whom they work will want to strengthen the vital link between midwife and consultant by selecting from the available local talent a limited number of the best qualified practitioners to come to their aid when required. In other words, they will no longer accept a registrable medical qualification as sufficient evidence that a man is competent to practise difficult midwifery. The significance of this proposal needs no underlining. It must be recognised as a big step towards the removal of midwifery from ordinary general practice.

What has led the Ministry's investigators to favour such a step? From the summary appearing on p. 1126 it will be seen that they made a laborious inquiry into all the maternal deaths in certain areas during 1934 and found much to criticise in the conduct of pregnancy, labour, and the puer-

perium. Their observations are consistent with the results of the analysis of nearly 6000 maternal deaths made by the Departmental Committee in 1932, when it was estimated that in nearly half the cases there was a "primary avoidable factor." But the study of failures does not reveal the whole truth, as the Ministry's medical officers would be the first to admit. An examination of 700 fatal cases of appendicitis would probably suggest that everyone with a pain in the stomach should at once see a surgeon, yet this would be nonsense. The evidence of failure provided by these surveys is *supporting* evidence, but is not in itself enough. The true argument in favour of taking midwifery out of ordinary general practice is this. The birth rate is falling, more and more women are being delivered in hospital or by midwives alone, the number of general practitioners is increasing, and so is the volume of their work. The result is that many practitioners deliver very few women in the year, and some are called only to abnormal confinements. Many of the younger men, although they feel obliged to undertake such work, have had too little experience of midwifery to be competent in emergencies that may tax the most skilful—and these emergencies are often encountered in the very difficult circumstances of poor homes. The medical student's instruction—however much is squeezed into it—does not turn out an obstetrician but only a man capable of becoming one. Unless he has special post graduate training or a long experience of unselected cases, he cannot be regarded as the proper person to go to the rescue of a midwife. Occasional obstetrics is even more dangerous than occasional motoring, and the conduct of labour should be undertaken only by those who are genuinely interested in it and willing to give it time and thought.

These arguments are familiar enough, and there are good answers to them. The British Medical Association's scheme for a maternity service is based on every woman having her own doctor to attend her before, during, and after confinement, and its exponents emphasise the value of this continuity of care. Where, as often happens, a practitioner takes a pride in his midwifery, and does not allow other duties to deflect him from it, he can certainly offer his patient a service of the very best. But it has clearly become impossible for every general practitioner to take this attitude or give this service, and many would be thankful if they were no longer expected to practise what they regard as a specialty. Moreover, those who do in fact want to do such work might welcome the withdrawal of unenthusiastic competitors. Be this as it may, what is immediately to be expected is that the Ministry will instruct each local authority to consult with the medical profession in its district and prepare a panel of those practitioners who are best qualified to assist midwives in case of need. From this no great flight of imagination is required to foresee a day when post-graduate diplomas will be demanded as a condition of obstetric practice, and the Ministry's present report marks a turning-point which it is well at least to recognise.

THE VOLUNTARY HOSPITALS GOODWILL AND FINANCE

THE recommendations of the commission on the voluntary hospitals summarised on p 1123 deserve careful study. The commissioners show a full understanding of the spirit that inspires the traditional system of hospital administration in this country and the value of the freedom associated with voluntary service. But they have reached the deliberate conclusion that a limitation of independence is essential to the continued existence and expansion of voluntary hospitals and that methods must be devised whereby co-operation among the voluntary hospitals themselves and between voluntary and municipal hospitals can be promoted. An important recommendation designed to this end is the division of the whole country into separate regions based on the present regional organisation of the British Hospitals Association. The regional councils appointed to co-ordinate the services rendered would have no coercive or compulsory powers but would receive day-to-day information about empty beds and so facilitate the admission of patients. The functions of regional councils would include also the maintenance and direction of an ambulance service, the arrangement for the transfer of patients no longer acutely ill to 'auxiliary hospitals' and perhaps most importantly the strengthening of the hospitals' finances. Following logically enough the general conclusion that if the total annual income of the voluntary hospitals could be distributed in accordance with their individual needs their financial position would not be unsatisfactory it is suggested that in course of time regional funds should be created on lines similar to that of King Edward's Hospital Fund for London. The idea is that such funds would create new sources of support and that the education of donors to contribute to hospitals as a whole would ensure a better allocation of their contributions than results at present from gifts to the particular institution of their choice. If the regional councils acquired enough influence they would be able to improve or close down inadequate and inefficient institutions; new hospitals would not be built nor would old ones be extended without their approval. And the anomalies whereby there is overlapping of effort in one district while others have a defective hospital service would be gradually eliminated.

The question arises whether the voluntary hospital income can be spread over the voluntary hospital system without substantial diminution of the total sum available. It may be that some of those hospitals which are in a better financial position than others are earning it by the value of their work and it may be that some at least of those in financial stress could gain more support if the value of the service they offer to their public were greater. It is curious that in a report which touches on almost every aspect of hospital activity and in remarkable detail there is little reference to variation in the quality of the service given in different voluntary hospitals. The fact that for

the most part this service is of a very high order should not blind us to a second fact that almost everywhere it is capable of improvement, and in some places of considerable improvement. The word service is used in its broadest connotation to include not only medicines and surgery and nursing food and lodging light and air it includes also contact of patients with resident staff and honorary staff, contact of relations with both and with sisters of wards and contact of hospital doctors with general practitioners, conditions of admission and discharge of patients and of consultations for out-patients and finally the proportions in which zeal and discretion are mingled in the almoners and secretaries' departments. It must be obvious to everyone that quality of service is not the only factor in determining support if only because it is so difficult for the laity to discriminate between its grades. Other factors include location, prosperity of the district and the luck which sometimes brings rich patrons to charities irrespective of their special needs. The commissioners themselves point out that the public are not yet educated to give as readily to a hospital service as to a particular hospital. Will they ever be? Certainly now and perhaps always there are many who would sooner give one pound to a poor person who is ill than a pound or some thing less to the sick poor. Local patriotism is a strong incentive to personal service. Anything which weakens interest in the local hospital for its own sake will go far to undermine the present strength of the voluntary hospital system and a so-called parochial interest may well bring stronger financial support to the voluntary system than a regional or cosmopolitan attitude.

If we remain less hopeful than the commissioners that their solutions are necessarily the best ones we must commend their laborious study of the problem. Though the conclusions they have reached are simply and even dogmatically stated, it is obvious that the considerations on which these conclusions are based have been carefully weighed, and that this report will take a worthy place in the series of documents issued during the last 20 years on different aspects of the services and responsibilities of voluntary hospitals. The peculiar merit to which attention is drawn in its pages is that it is a drive towards reform not from without but from within and that for this reason if for no other it is the more likely to be implemented.

THE FUTURE OF TUBERCULOSIS

Dr D ARCY HART'S Milroy lectures concluded in our present issue illustrate the change in attitude that is coming over younger physicians. The facts on which he builds his argument are for the most part widely known. We are most of us aware that there has been an ominous lag in the decline of tubercle mortality among young adults, especially females and especially in depressed areas. Despite the distribution of diagnostic centres throughout the country in the form of tuberculosis dispensaries the proportion of cases

diagnosed early has shown little increase in the last twenty or thirty years. The prognosis per group has also been little affected, the one great therapeutic advance, collapse therapy, is applicable only to a small proportion of cases (10 per cent in the recent London County Council series) although many advanced cases must have passed through a stage, before diagnosis, when it might have altered the course of their lives.

Hence it is evident that, however gratifying the drop in the general incidence of tuberculosis, there is still a long way to go. Delay by the patient in seeking advice is obviously the cause of much late diagnosis, and social factors such as fear of unemployment play a part in causing this delay. Progressive public health authorities are encouraging patients to present themselves for dispensary examination as soon as suggestive symptoms appear, and by facilitating the use of X rays they are ensuring that the examination will be as effective as possible in detecting disease even in its earliest clinical stages. But it is here that Dr HART steps in with arguments which cut at the roots of the present organisation, however efficiently run. He points out that radiological signs appear considerably in advance of symptoms and that this being so it is illogical, in attempting to ensure early diagnosis, to wait for the patient to take the initiative after the appearance of symptoms. The alternative, he suggests, is the periodic health examination of selected groups of people, especially young adults. This examination would be based primarily on radiography, although in groups with low tuberculosis incidence, expense might be saved by preliminary Mantoux testing. This scheme is theoretically no more revolutionary than the periodical inspection of the teeth of school-children, but progress along the lines suggested would lead eventually to "a comprehensive health service that would include the detection of pulmonary tuberculosis as merely one of its important functions." Objections would no doubt be many and varied. At Dr HART's estimate the cost of the tuberculosis scheme, which is at present rather over two shillings per head, would increase and require the expenditure of at least double this amount on diagnosis alone. Other objections include the danger of inducing a tuberculosis phobia and also the difficulty of persuading a symptomless patient to accept the stigma of sanatorium treatment. Although presumably this stigma would diminish if really early diagnosis and treatment were to make complete recovery the rule, the physicians administering such a scheme would have difficulty in inducing a symptomless patient to undergo a course of treatment if it involved the risk of losing his job. Their task would be made still more onerous by their knowledge that many such cases recover without ever knowing they have been ill.

Nevertheless the conclusion to be drawn from Dr HART's lectures is that although it has many excellent features our present tuberculosis scheme does not strike sufficiently near the root of the problem to satisfy the demands of the future. The radical attitude he represents is associated,

moreover, with a growing realisation that preventive medicine cannot make much headway in face of bad social conditions. At present it is all too clear that barely adequate nutrition is often the lot both of the tuberculous patient and of other members of his family just at a time when abundant food is essential to their well being. And those who follow Dr HART's close reasoning must conclude that, if common sense is to be applied to tuberculosis, society must do more to tip the balance in favour of the patient rather than in favour of the tubercle bacillus.

THE SITUATION IN SPAIN

MUCH is said nowadays about the way in which rapid communications have diminished distances. Yet the civil war in Spain is still so far away as to be barely credible. The feeling that these events are only newspaper stories must be the chief explanation of our comparative failure to respond to the desperate needs of people living only a few days' sail to southward of us. In the past week or two something has been done to bring home the realities of the situation in the Basque provinces. Serious attempts are being made to remove from Bilbao women and children whose danger is evident from the fate of Guernica, and we understand that money for this purpose will be gratefully received by the National Joint Committee for Spanish Relief, 35, Marsham street, London, S W 1. Associated with the committee in its general work in Spain are the Save the Children Fund (20, Gordon square W C 1) and the Friends' Service Council (Friends House, Euston road, N W 1), both of which, despite deficient funds, are doing much to dispel the idea that the English have ceased to care.

An illustrated pamphlet called "Children in Spain To-day" reaches us from the Committee Against Malnutrition, with a foreword signed, among others, by Dame Janet Campbell, Miss Harriette Chick, and Miss Edith Pye. It shows that already in January the number of refugees in the Government area exceeded a million, or 10 per cent of the population, and it adds that "the public conscience in western countries may have to prepare itself for a great relief effort in the near future, if the misery of a famine upon our European continent—however short its duration and restricted its scope—is not to be repented in our time." There is no collapse of health and welfare services, however, on the Government side of the lines, indeed they have expanded remarkably. Hence whatever help is given for the prevention or relief of distress is likely to be used effectively.

Finally—which directly concerns the medical profession and its allies—there is a constant demand for medical and surgical equipment and supplies. The goodwill of manufacturers is now being asked for a scheme by which workpeople engaged in making such things may work overtime and thus earn credit with their employers for organisations sending aid to Spain. It is believed that a large proportion of employees would gladly give a few hours a week to such voluntary work, and since the firms concerned would secure the orders for equipment they would gain rather than lose by according the facilities asked for. We hope that many firms may be willing to give the scheme sympathetic consideration. It is planned by Voluntary Industrial Aid for Spain (32, Great Ormond street, W C 1), which is already applying the principle to the manufacture of motor cycle sidecar ambulances. These have proved their worth in mountainous regions where other vehicles cannot reach the wounded.

ANNOTATIONS

ARTHROGRAPHY IN CONGENITAL DISLOCATION OF THE HIP

DIFFICULTIES in treatment of congenital dislocation of the hip joint are due as much to peculiarities in the shape and attachments of the capsule as to misshape of the femoral head. Jacques Leveuf and Pierre Bertrand¹ claim that arthrography provides a valuable aid in assessing the chances of success of closed reduction. The shadow picture obtained in congenital hip disease defines the capsular cavity as consisting of two parts: a cephalic, in relation to the femoral head and the dorsum illi and an acetabular. The communication between the two parts may (1) be free (2) a narrow isthmus, and (3) obliterated by adhesions. In the first group reduction is likely to be easy and retention of the hip in the reduced position may present little difficulty. When communication between the two parts of the capsular cavity is evidently much narrowed Leveuf and Bertrand regard reduction by manipulation as a very traumatic procedure liable to cause damage and not worth attempting; open reduction is then indicated. Arthrography also explains the unsatisfactory clinical results sometimes obtained in cases where the radiographic report on the reduction has been encouraging. Adhesions to the dorsum illi prevent the capsule from slipping down with the femoral head. The arthrograph may show a fold of capsule intervening between the joint surfaces and such a joint will necessarily be unstable.

A variety of substances have been suggested as suitable for injection into joints. Of these Leveuf and Bertrand prefer two—Diagnorenol in a 35 per cent solution and Ténébryl in a 30 per cent solution. Some authors have suggested preliminary injection of a small quantity of air but Leveuf and Bertrand have found this unnecessary. The procedure is however distinctly painful, and general anaesthesia is usually advisable in young children. In others 2 c.cm. of novocain are injected before the contrast solution by means of a 10 c.cm. syringe and a lumbar puncture needle. The hip to be injected is raised on a cushion and the limb held by an assistant who rotates it as necessary. The needle is entered flush with the anterior surface of the great trochanter just below its summit. It is pushed along the neck of the femur till stopped by the projection of the head. When the head is obviously anteverted it may be simpler to aim directly at the head of the bone and not to use the trochanter and the neck as a guide to it. The contrast solution is injected five minutes after the novocain. About 10 c.cm. is usually necessary for a luxated hip although in a normal joint 2 c.cm. is sufficient. The radiogram is taken as soon as possible for absorption of the solution is very rapid and after 15 minutes no shadow may be obtained. A slight circumduction of the joint aids spread of the solution. Where a complete block occurs between the capsular and acetabular parts of the capsular cavity the solution will remain localised around the head. Constriction of the capsule between the acetabular rim and the psoas muscle, its contraction by adhesions or its obstruction by the round ligament produces the narrowing of the isthmus mentioned above. The longer the condition has existed the more definite the capsular deformities are likely to be. This corresponds with the recognised difficulties in reduction in

children seen after the first two or three years of age. A complete and stable reduction will show a crescentic shadow out-lining the head of the bone and without extension on to the dorsum illi.

THE ERADICATION OF OPHTHALMIA

THE Elizabethan poor law broke down badly with the poverty that prevailed in England after the Napoleonic wars. Pauperisation of large masses of people threatened to become the established principle in the running of industry and particularly of agriculture for such monetary grants as were received in outdoor relief tended to be taken by employers as part of the wages of their employees; indeed some farmers made it their practice only to employ those who were on relief. In an attempt to break this vicious circle the Poor Law Act of 1834 was introduced with its radical change of emphasis from outdoor to indoor relief. Under the new dispensation whole families were transferred to the workhouses and care was taken not to make these comfortable. The inmates were herded together—the old and the young, the sick and the healthy, the desperate and the merely squalid. What it all meant in terms of human misery may be guessed from the columns of this journal at the middle of last century: the example reproduced on p. 1145 is sufficiently shocking. And readers may remember *Oliver Twist* or the *Parish Boy's Progress* which appeared in 1837.

Not the least of the problems that emerged was the wholesale infection of children at workhouses with trachoma and gonorrhoeal ophthalmia. The difficulties did not lessen to any extent when poor law schools came to be built to replace the private contractors' schools which the guardians used at first because they were cheapest. When the poor law schools ultimately did come in the fifties no provision was made for more than the most elementary treatment of the sick child. These institutions which later came to be known as barrack schools, were almost ideally planned for the propagation of infective conditions among the very large number of children herded in them and the spread of ophthalmia was but part of the larger problem of the spread of infectious diseases in general. The guardians were not altogether oblivious to their duties when an epidemic broke out costly steps were taken to check it. But a feature of these epidemics was the advice given with monotonous frequency by every ophthalmologist called in and declined with equally monotonous persistence by the guardians—the establishment of sufficient facilities to isolate every infected child within the schools or better still in some central outside institution where they could be kept under school conditions until every sign of infection had disappeared. A tentative experiment by Nettleship in 1873 fully justified such a procedure but the cost of erecting such a central hospital school was considered a final objection just as the cost of erecting schools under the authority of the guardians in tend of sending children to the contractors' establishment had been held as an equally final objection a generation earlier. In the meantime the toll of complete or partial blindness kept on mounting steadily in the good years fleetingly in the bad years. No poor law school was ever completely free from ophthalmia and in some almost all the children were affected. Persistent agitation against this state of affairs ultimately led to the setting up in 1891 of a departmental committee to investigate the whole

¹ *Pr Med* March 29th 1937 p. 457

working of the Poor Law Act as it affected children. The labours of that committee led to a complete change in poor law education and a central ophthalmic isolation hospital school came at last to be built when the Metropolitan Asylums Board was charged with the responsibility of looking after the physically defective children in poor law schools. The central hospital school, White Oak Hospital, Swanley, was opened in 1903, and a year later the sister institution, Highwood Hospital at Brentwood. Trachoma quickly ceased to be a problem of importance as against 292 cases admitted in 1903, 10 were admitted last year, despite the fact that the hospital draws nowadays not only on what is left of the poor law school services, but also on the whole of the elementary schools under the London County Council. Indeed, trachoma was stamped out with surprising ease once the proper machinery was established, and White Oak Hospital is no longer a school devoted exclusively or mainly to trachoma, but has become a highly specialised institute for dealing with chronic eye diseases in children.

The lesson that Mr Arnold Sorsby emphasises in his review of the origin and development of White Oak Hospital,¹ which he serves as visiting ophthalmologist, is the one to which the Board of Education drew attention in 1929—namely, that there is still a dead weight of external eye conditions in children all over the country. It must be admitted that London, with its rate of 4.9 per 1000 as against 14.7 for the country as a whole, has reason to be satisfied with the achievement of its hospital school institution, and it is regrettable that there is only one such institution in the whole of the country. The change in the character of White Oak Hospital leaves one wondering not so much that the problem which the hospital has solved was ever allowed to arise, but that the road to its eradication should have been so full of difficulties and obstruction. Like most successful public health measures, the history of the hospital illustrates not so much the "inevitability of gradualness" as the desperate gradualness of the inevitable.

ABNORMALITIES OF SWEATING

ABNORMALITIES of sweating may be the result of interference in the nervous supply, of alteration in the sweat glands themselves, or, as in the case recently quoted by Berkman and Horton, at a staff meeting of the Mayo Clinic,² of hysteria. Several cases have been quoted by Wilson³ and another by Uprus, Gaylor, and Carmichael,⁴ in which excessive sweating has occurred on certain parts of the face in association with salivation, when the normal sympathetic nervous supply has been interfered with as a result of previous trauma. Cases of auriculo temporal syndrome and "crocodile tears" show phenomena of a similar type. Wilson suggests that the condition is caused by a hyperactive state of the sweat glands, as the result of removal of inhibition resulting from the degeneration of their sympathetic nerve supply. In the case presented by Mogens Fog⁵ the lesion was one of the glands. His patient, following a prolonged attack of paratyphoid fever, was unable to sweat when exposed to great heat, or after prolonged muscular exercise, such as would produce profuse sweating in a normal individual. He complained of intense discomfort, palpitation, and burn-

ing and flushing of his skin, particularly of his face. Microscopic examination of his skin showed considerable destruction of his sweat glands. Mogens Fog suggests that these phenomena are the result of the body's attempt to promote heat loss by radiation by extreme dilatation of the skin vessels, in the absence of the usual elimination by sweat formation and evaporation. The most interesting feature of Berkman and Horton's case of hysteria associated with absence of sweating is the unconscious resistance on the part of the patient to any muscular effort which might cause a rise in body temperature and so promote sweating, when the nature of her disorder was explained to the patient and this resistance was overcome normal sweating resulted. Uprus, Gaylor, and Carmichael were of the opinion that the immersion method of warming the subject was a more certain and satisfactory method of raising the blood temperature and promoting sweating than the dry air-bath method used by Berkman and Horton. The latter point out that their patient, although showing, in their opinion, signs of sympathetic dysfunction, did not present the usual features of heat allergy, such as the urticaria usually complained of, and they do not mention any history of intense flushing or of dry scaly skin, which were both such marked features in Mogens Fog's case. It is unfortunate that they were not able to test any of the other systems under sympathetic nervous control.

PSITTACOSIS

In 1929 the Minister of Health issued a memorandum calling attention to the existence of psittacosis in England both in birds and in man, and asking that material from suspected cases should be sent to the laboratory of the Ministry for investigation. A new report has now been issued¹ in which the methods for the laboratory diagnosis of the disease are described in such detail that with its aid it ought to be possible to investigate cases of psittacosis in any properly equipped bacteriological department. The Ministry obviously now consider that diagnostic methods have reached a state when they can be relied on for routine use. The new report describes the precautions necessary in handling infectious material and stresses the risks of infection from experimental material. The morbid anatomy of the disease in infected birds is described. Findings suggestive of psittacosis are (1) fibrinous pericardial effusion, (2) greatly enlarged spleen, sometimes with necrotic nodules, and (3) a pale or yellow liver with necrotic or hæmorrhagic spots. It is recommended that direct smears should be made from obviously affected organs and from the lungs and heart blood. The smears are stained with Gramsa or by Bedson and Bland's or Lépine's modification of Castellónada's method. If the smears are clearly positive for virus bodies no further procedures are necessary in routine diagnosis. If they are negative or doubtful the ground up tissues are injected intraperitoneally into mice. Mice injected with virulent material usually die in 5 to 30 days. The post-mortem appearances vary somewhat according to the time taken by the mice to die. If death takes place three or more days after injection the peritoneal exudate is thick and fibrinous and virus bodies can generally be demonstrated in the macrophage cells of the exudate. In man the sputum, blood, and pleural exudate from the living patient, particularly during the early stages of the disease, or such post mortem material

¹ Ann. Rep. London County Council for 1935. London 1937. Vol. IV. Part III. Pp. 60.

² Berkman, J. M. and Horton, B. T. (1937) *Proc. Mayo Clin.* 12, 161.

³ Wilson, W. C. (1936) *Clinical Science*, 2, 273.

⁴ Uprus, V., Gaylor, J. B. and Carmichael, E. A. (1934) *Brain* 57, 443.

⁵ Fog, M. (1936) *Amer. J. med. Sci.* 107, 2040.

¹ Laboratory Diagnosis of Psittacosis. Rep. publ. H.M.S.O. *Subst. Lond.* No. 20. London: H.M. Stationery Office, 1937. Pp. 11, 6d.

as the spleen affected lung &c should be examined both directly and after passage through mice. In all psittacosis infection whether of birds, rodents, or man the essential change is the invasion and destruction of the reticulo-endothelial cells, and special attention should therefore be given to these cells in the search for virus bodies. A good coloured plate shows the characteristic appearances of these bodies. The concluding paragraphs of the report discuss the special problem of psittacosis in budgerigars (love-birds). The disease in these birds is less severe than in ordinary parrots and parakeets and instead of dying they may survive to become carriers of the virus. Further investigation is required as to the extent of infection among the budgerigar flocks of this country and the Ministry asks pathologists to endeavour to obtain more information on the matter.

SÉRUM TREATMENT OF PNEUMONIA

THE treatment of lobar pneumonia with specific antibacterial sera began in America soon after the discovery of the serological types of the pneumococcus in 1913 and later it received a decided fillip from Felton's discovery of a practical process for the refinement and concentration of antisera to Types I and II pneumococci. Following the good reports of Cole Park, Bullowa Cecil, Finland and others several of the United States, notably Massachusetts and New York have begun a pneumonia service to encourage the serum treatment of lobar pneumonia in smaller urban and rural districts—a plan which may be recommended especially to the industrial areas in the midlands and north of England and to Scotland where pneumonia is more common than it is in the south. Meanwhile the pioneers forgo ahead. The division of the heterogeneous Group IV pneumococci into some 20 specific types by Cooper and her co-workers has enabled the clinician to find out the relative incidences of these types as causal organisms of lobar pneumonia and the serologist to prepare antisera to the more common of them. In particular the treatment of lobar pneumonia due to Types V VII VIII and XIV pneumococci has been under investigation. For example Bullowa and Wilcox¹ have collected 249 cases of Type V lobar pneumonia (or 7.5 per cent. of the total pneumonias) at the Harlem Hospital, New York in the past seven years in comparison with a mortality rate of 20.8 per cent. in an untreated series of 163 there were only 5 deaths (7.5 per cent.) among 67 treated with serum. Similarly Finland and co-workers,² at the City Hospital, Boston isolated Type VII pneumococci from 195 patients in seven years, representing 5.5 per cent. of all the cases from which specifically typed pneumococci were obtained during this period. Of these 195 were suffering from pneumonia and it is significant that whereas Type I and II infections are almost constantly lobar in type about one fifth of the Type VII cases were classified as broncho-pneumonia. In a series of 30 cases of Type VII lobar pneumonia rapid and permanent clinical improvement followed treatment with concentrated type-specific antiserum. Finland and Tilghman³ have reported similar results in a small series of Type V lobar pneumonia. Nor in the pursuit of new types has Type I been forgotten as may be seen from the paper⁴ Cecil read to the International Micro-

biological Congress last summer. The illness he says from being a serious exhausting infection of 7-8 days duration can be reduced by early serum treatment almost to the status of an influenzal attack. In other words it is dramatically aborted. Spread of infection is prevented bacteriemia is checked complications are inhibited and the death rate is cut to approximately one-sixth of the standard mortality for Type I pneumonia. Meanwhile despite the truth of Cecil's remark that reports on serotherapy of lobar pneumonia have been without exception favourable little enthusiasm for this new line of treatment is being shown in this country. We were glad therefore to be able to publish a few weeks ago the observations made by Drs. Langley Mackay and Stent⁵ on Types I and II pneumococcal pneumonias treated with specific sera at the Hope Hospital Salford. Though some of their conclusions are open to argument it is clear that the work they are doing is of real value.

THE SEX HORMONES IN ECLAMPSIA

THE work of O. W. Smith and G. Van S. Smith on the secretion of sex hormones in eclampsia and pre-eclampsia has already been annotated in these columns.⁶ These authors reported that the blood urine and placentas of eclamptic subjects contained excessive amounts of a gonadotropic hormone and less constantly a paucity of oestrogenic hormones. Their experimental results indicated that the extra gonadotropic hormone was the same luteinising type (prolan B) that is found in normal pregnancy; and that it was derived from the placenta. The methods at present available for the assay of sex hormones are far from satisfactory but if the above observations are correct it becomes important to find out whether over-secretion of prolan B is responsible partly or wholly for eclampsia or whether it is merely a secondary response to some other dislocation of endocrine balance—analogue for instance to the excessive output of prolan A which is seen at the menopause.

With an equation involving so many inter-related variables as the reproductive cycle it is no easy task to distinguish between cause and effect. The fact that toxæmia is especially common in multiple pregnancy and in cases of hydatidiform mole suggests that increased secretion of prolan B may be of primary rather than secondary import. But the inference is not conclusive and it is more to the point to ask whether when eclampsia complicates an otherwise normal pregnancy hypersecretion of prolan precedes or merely accompanies the clinical symptoms. Preliminary observations by Smith and Smith suggested that over-secretion may antedate symptoms by several weeks and they now⁷ bring forward further evidence that bears out this suggestion. They have collected serial samples of blood and urine throughout pregnancy in a series of 27 pregnant women and estimated the prolan and oestrin content of the samples. Their series includes 11 diabetic subjects, who were selected because the incidence of toxæmia is high in diabetes. Of their 27 patients, 6 developed pre-eclampsia, 4 of these being diabetics, 17 including 5 diabetics remained free from symptoms while the remaining 4 pregnancies were neither normal nor frankly toxæmic. In the toxæmic patients high prolan and low oestrin figures were observed and it seems clear that the rise in serum

¹ Bullowa, J. O. M., and Wilcox, C. (1935) *J. clin. Invest.* 15, 711.

² Finland, M., Ruesserve, J. M., Dowling, H. F., and Tilghman, R. (1937) *Amer. J. med. Sci.* 193, 48-59.

³ Finland, M., and Tilghman, R. C. (1936) *New Engl. J. med.* 215, 1211.

⁴ Cecil, R. L. (1937) *J. Amer. med. A.* 108, 659.

⁵ Langley, G. B., Mackay, W., and Stent, J. *Lancet*, April 2nd 1937, p. 70.

⁶ *Lancet* 1935, 2, 61.
Amer. J. Obst. Gynec. 1937, 33, 305.

prolan occurs about six weeks before the appearance of clinical symptoms

This strengthens the opinion that over production of prolan plays some part in causing eclampsia. How it does so is uncertain. There appears to be a reciprocal relationship between the prolan B and oestrin content of the plasma, and oestrin deficiency may be the important factor. It does not seem likely that over-secretion of prolan is the only cause of toxæmia, for eclamptic symptoms may be wholly lacking in cases of chorion carcinoma, where the output of prolan is enormous. The work of Smith and Smith has not, therefore, solved the problem of eclampsia, but one may hope that further research along these lines may eventually disclose the secret, and lead to rational, instead of empirical, treatment of these tragic illnesses.

LONDON STARLINGS

It has been shown that the genitalia of many birds, mammals, reptiles, amphibians, and fish may be induced to anticipate their normal time of development by extending the daylight available in winter and early spring by artificial illumination, lengthening daylight seems certainly to be an important factor in spring breeding, and it is possible that man had a more definite reproductive reason than he has now before he learned to equalise his days with artificial light. There is also some evidence, not altogether consistent, that maturation may be hurried by disturbance and curtailing the usual hours of sleep. Prof. William Rowan now finds¹ that the testes and ovaries of starlings from the huge flocks which come into London every night to roost are more forward in development than those of country birds, and suggests that this is due to their being kept on the fidget by the noise of traffic, the light at the roosting places he finds to be well below the effective threshold. The night noises of London are indeed dreadful, but we doubt whether he has made out his case. Birds often choose to put their nests in noisy places by railway lines and busy high roads, so that it is unlikely that they find such conditions disturbing. Prof. Rowan also does not state the origin of his country controls, whether they came from a big country roost or from sporadic birds. The former is obviously necessary since the dormitories in woods and plantations far from towns are by no means altogether quiet at night. Perhaps it is not the noise of the vehicles but the aggregation of so many birds together that stimulates sex.

DIVINYL ETHER

WHATEVER may be its merits or demerits as an anæsthetic for long operations divinyl ether is certainly a most valuable agent when a short but profound narcosis is required. It is not uncomfortable or irritating to inhale, and the patient recovers quickly and generally without distress from its effects. Moreover, it has the great practical advantage that it can be administered by very simple means. These and other points are well brought out in a recent review of a series of 2675 administrations.² The authors recommend that when more than half an hour's anæsthesia is wanted the ether should be volatilised with oxygen, otherwise they use a simple drop method on a few layers of loosely fluffed gauze. Divinyl ether is of course a potent anæsthetic, the

concentration necessary in the blood for production of anæsthesia being even less than that of chloroform. Consequently the drug must be given with due care, and danger is easily introduced if a closed apparatus is employed by means of which too high a percentage of vapour would be rapidly acquired. The wide applicability of divinyl ether is illustrated by the fact that in this series the youngest patient was fifteen months old and the eldest seventy-five years. The authors remark on the freedom from post-anæsthetic pulmonary complications. Thus, however, would surely be expected from any anæsthetic used for such short periods of time as was divinyl ether on most of the recorded occasions. It is three years since Wesley Bourne of Montreal³ recorded his satisfaction with divinyl ether in obstetrics, and we would be interested to learn whether it has been tried for that purpose in this country. So simple a method if it proved equally safe might well come to rival gas and oxygen in popularity.

THE MARCH OF TIME

MANY of our readers may not know, but their children will tell them, that this is the title of an instructional—or, as it is called technically, a documentary—film which is shown in many picture theatres as a serial. In this film, which consists of several short episodes, the moving picture is used as a newspaper or rather as a magazine. Accompanied by a running commentary it depicts matters of current interest, grave and gay, and it is changed every few weeks. One cannot see some of the episodes dealing with a serious subject without being impressed by the extraordinary, even alarming, power of this new technique in educating and moulding public opinion. The latest edition of this series—No 11—contains an episode entitled *The Conquest of Cancer*. The greater part of the film has been made in the United States. Several of the leading American medical authorities on cancer appear, without their names being mentioned, and make brief statements emphasising the fact that cancer is curable, and that many thousands of persons have been cured of cancer because they have sought medical advice sufficiently early. They warn the public against the use of quack cures on which in the United States a large amount of money is being wasted. The scene then shifts to England where Sir Kingsley Wood appears on the film to teach the same lesson. The film has evidently been editorially supervised by responsible medical authorities in America, and it proves that the admittedly difficult task of educating public opinion with regard to cancer can be accomplished effectively and at the same time with tact and restraint. The English portion is not as strictly anonymous as the American, and though no exception can be taken to the discreet reference to distinguished workers made by Sir Kingsley Wood, danger lies in this use of the cinema to advertise individual institutions. It must not be allowed to weaken the self-denying code of anonymity that the medical profession has for very good reasons imposed upon itself.

WE regret to learn of the death at an advanced age of Prof. Bennett May, emeritus professor of surgery at the University of Birmingham.

Queen Mary has appointed Mr C. B. Goulden, surgeon oculist, and Mr Francis Donovan, surgeon dentist, to her household.

² *Nature* April 17th 1937 p 663
³ Ravdin I. S., Filason F. L., Condes G. I., Holloway T. B., Ferguson L. K., Gill A. B., and Cook T. J. *J. Amer. med. Ass.* April 3rd 1937 p 1163

SPECIAL ARTICLES

BRITISH HOSPITALS ASSOCIATION
REPORT OF A COMMISSION ON VOLUNTARY
HOSPITALS

THE annual conference of the British Hospitals Association appointed on June 1st, 1935 a commission to take into consideration the present position of the voluntary hospitals of the country to inquire whether in view of recent legislative and social developments it is desirable that any steps should be taken to promote their interests, develop their policy and safeguard their future, and to frame such recommendations as may be thought expedient and acceptable. The members of the Commission were Viscount Sankoy (chairman) Alderman Miss Bartleet Sir Henry Brackenbury M.D. Alderman Alan Davies, Prof. L. S. Dudgeon F.R.C.P. Mr H. L. H. Hill Col D. J. Mackintosh, M.B. Mrs E. M. Munson S.R.N. Sir Reginald Poole Provost A. W. Sheen M.S. with Mr R. H. P. Orde as honorary secretary.

After taking a large body of oral and written evidence from representatives of all the associations which could give valuable information, the Commission have issued their report.¹

The Commission recall the action of the Minister of Health in 1921 in setting up the Cave Committee to consider the present financial position of the voluntary hospitals and to make recommendations as to any action which should be taken to assist them. The Cave Committee reported that the lack of organisation and co-operation among the voluntary hospitals detracted from their efficiency and caused much avoidable expenditure. These institutions which should be parts of a connected system were for the most part units working in isolation or in competition with one another and learning little or nothing from one another's successes or failures. Subject to qualifications concerning the teaching hospitals and special hospitals the committee saw no reason why arrangements should not be made both for defining the functions of hospitals and for promoting co-operation among them. They accordingly recommended the setting up of a Voluntary Hospitals Commission consisting of up to twelve members nominated by the Minister of Health the Secretary of State for Scotland the Joint Committee of the British Red Cross and the Order of St. John of Jerusalem King Edwards Hospital Fund for London the British Hospitals Association the Royal College of Physicians, the Royal College of Surgeons the British Medical Association and the Scottish Committee of the British Medical Association also the formation of local voluntary hospital committees nominated by the Lord Lieutenants. They hoped that although these bodies were to be established primarily for the purpose of distributing definite sums of money they would continue to perform their functions after these sums had been exhausted to collect information advise on accounts marshal appeals for funds, act as clearing houses for patients and promote the grading and co-operation of hospitals in their areas. They were to have no compulsory powers but would derive authority from their personnel and from their control over the distribution of money grants. Both the commission and the local committees were set up and distributed

£500 000 which had been granted them by Parliament. They survived for some time after this money had been spent but failed to bring about the reforms which the Cave Committee had urged as necessary for the efficiency of the voluntary system. They gradually disappeared—according to the present Commission—because possibly owing to their method of appointment they never secured the whole-hearted support of the hospitals also because in 1921 the efficiency of the voluntary hospitals as a system and not their individual existence was at stake because opinions as to reform differed and because there was no external menace to drive them together. The stimulus of immediate danger to their existence which was absent in 1921 has now the Commission say been supplied by the passing of the Local Government Act 1929 and the advent of the council hospital. To day the voluntary hospitals are themselves demanding those very reforms which the Cave Committee urged upon them and which they neglected to carry out.

THE COMMISSION'S RECOMMENDATIONS

This is the thesis on which the present Commission base their recommendations of which the principal ones are as follows:—

- 1 The division of the country into hospital regions
- 2 The formation in each region of a Voluntary Hospitals Regional Council to correlate hospital work and needs in the region
- 3 The formation of a Voluntary Hospitals Central Council to co-ordinate the work of the regional councils.
- 4 The establishment of central and regional offices
- 5 The initiation of the above scheme by the British Hospitals Association with the subsequent incorporation of the scheme in the work of the association
- 6 The grouping of hospitals in a region round a central hospital
- 7 The grading of hospitals into central, district and cottage hospitals.
- 8 The creation of a regional fund for the benefit of all the hospitals in a region
- 9 The payment of the expenses of the new organisations proposed from hospital and regional funds and from government grants.
- 10 The adoption by all hospitals of a uniform system of accounts
- 11 The securing of financial aid for hospitals from the State and from the local authorities
- 12 The adoption of improved methods for the collection of funds for hospitals.
- 13 The setting up or development to the full in all regions of contributory schemes
- 14 The making of arrangements by which all the hospital beds in a region can be utilised in the best interests of patients and to the fullest extent
- 15 The full provision of auxiliary hospitals to relieve the main hospitals
- 16 The undesirability of the establishment of special hospitals and the affiliation—as far as possible—of those at present existing with general hospitals
- 17 The establishment of machinery to obviate congestion in some hospitals and empty beds in others
- 18 The provision by all hospitals of accommodation for paying patients
- 19 The restriction of attendance at out-patient departments of hospitals by adopting certain limitations and the taking of steps to remedy the present inconvenience of departments
- 20 The making of appointments to the visiting medical staff of a hospital under the guidance of appropriate experts
- 21 The appointment of a member of the visiting medical staff of a hospital to be governed by a formal agreement between such member and the hospital

¹ Published by the British Hospitals Association 12 Crosscourt-crescent London, S.W. 1 1p 23 1s

22 The payment—with certain qualifications—of the visiting medical staff

25 In regard to the nursing service (i) the improvement of the conditions including higher pay for trained nurses, (ii) the adoption of a higher educational standard for entrants, (iii) the commencement of training in all cases by attendance at Preliminary Training Schools, (iv) the recognition of the position of the matron as an administrative officer and her direct access to committees when matters affecting her department are under consideration, (v) the universal adoption of a pensions scheme

24 The recognition of the special qualifications required for the chief administrative officer of a hospital

25 The furtherance of a definite scheme of education in hospital administration

26 The universal adoption of a pensions scheme for the administrative staff

27 The provision of the services of a qualified accountant for hospital accounting when required

28 The consideration of the advisability of separating the collection of funds from administration

29 The securing of those holding statutory qualifications for some auxiliary services in hospitals and of those specially qualified through a recognised test for certain others

30 The organisation of the ambulance service in a region by the local authorities and the adoption—with certain exceptions—of a moderate charge to the patient for the service

31 The recognition of the special requirements of teaching hospitals

32 The keeping by all hospitals of patients' records on a uniform system of classification, a record department at each regional office

33 The furtherance by hospitals of research and of "follow up" methods

34 The publication by hospitals of annual clinical reports

35 The adoption of suitable publicity methods for hospitals with formation of a press bureau and the publication of a periodical

36 The special organisation of the voluntary hospitals in Scotland

37 The practical recognition by all hospitals of the powers conferred by Section 13 of the Local Government Act, 1929, with full co-operation as regards provision for the public health between voluntary hospitals and local authorities

FINANCE

The Commission conclude that if the thousand British voluntary hospitals could distribute their total annual income according to their individual needs, their financial position would not be unsatisfactory. They suggest as an ideal plan the pooling of a percentage of the revenue of each hospital, but doubt, however, whether the supporters of voluntary hospitals are yet prepared for so fundamental a change. They therefore recommend as a first step the creation of regional funds on a basis similar to that of King Edward's Hospital Fund for London. Such funds would, they think, possess the double advantage of creating new sources of support and of educating donors to help the hospitals as a whole. A uniform system of accounts would be necessary, but the Commission do not recommend the adoption of the "Revised Uniform System" of the King Edward's Fund, believing that a modification of this system could be devised that would strike a balance between the advantage of having good statistical records and that of simplicity. The Commission find no reason why the State should not contribute grants in aid of the voluntary hospitals. They lay down governing principles for contributory schemes, the establishment and growth of which they welcome. They also favour the establishment of provident schemes for paying patients of moderate means. They consider it to be the duty of voluntary hospitals to provide beds for paying patients of all

classes of the community and to give them a free choice of medical attendants, who should receive a separate fee

VISITING MEDICAL STAFFS

The Commission accept the payment of medical staffs as a general principle, but the suggestion was made to them that there exist three classes of medical staff to which this principle does not apply with the same force—viz, the staffs of teaching hospitals, the staffs of hospitals with a considerable number of pay-beds, and the senior staffs of other large general hospitals. They found some point in this contention when applied to the first two classes. A position on the staff of a hospital with a medical school is, they recognise, undoubtedly a valuable asset, but since there must be a lag of a number of years before the teacher can reap the reward of the time and work which he has given, the general argument for some form of payment therefore still applies to the junior members of the staff. If the State ever makes a special grant to teaching hospitals (as was recommended in the Report of the Scottish Departmental Committee on Health Services last year) some portion should, they think, be assigned to those members of the staff who actually give the clinical instruction. Moreover, in hospitals with a considerable number of pay-beds, the patients in which are liable for the fee of their medical attendants by private arrangement, the medical staff stand to gain a material advantage. This, however, only applies when the staff have a monopoly of attendance on patients in the pay beds. The Commission do not see that the senior staffs of other large general hospitals derive advantages which would lessen their claim to payment. Prolonged service on the staff of a hospital sometimes has material value, but by no means always, and it is not always the senior members of the staff who are preferred by their fellow practitioners or by the general public in the district.

While, therefore, the Commission agree with the general principle that the medical and surgical staffs should be paid, they think that there might well be exceptions or modifications in these stated directions. They would not expect a universal application of the principle immediately, because the circumstances of individual hospitals and the attitude of many members of their staffs vary so widely. If the principle is right, however, they think that the formidable difficulties in the way should in time be overcome. They suggest that the most satisfactory method may ultimately be found to be a definite part-time honorarium or salary. This must involve a statement of the duties undertaken and an obligation to fulfil them more exactly than is sometimes considered necessary to day.

THE NURSING SERVICE

Broadly speaking, the recommendations of the Commission for the improvement of the nursing service appear to follow those of THE LANCET Commission on Nursing. The problem of attracting a larger number of good candidates can, the Commission say, only be met by making the conditions of service more attractive. The school leaving certificate may be a suitable standard of education, though it may not be required of some otherwise suitable applicants. All nurses should begin in a preliminary training school, and central schools should be established in regions. From these schools candidates would pass to recognised hospitals. All possible opportunities should be taken for higher training and qualification. The Commission welcome

the diploma in nursing of certain universities and hope that this development will be extended. Special courses—e.g. in housekeeping and dietetics—should be facilitated. Remuneration should they say be higher and all nurses should be enabled to become members of the Federated Superannuation Scheme for nurses and hospital officers. Present hours of duty are considered to be too long the ideal being a 48 hour week. Until this ideal is attainable more nurses should be appointed to the relief staff. The ratio of nurses to beds should be at least one member of the nursing staff employed during every 24 hours to every two available beds, excluding nurses in special departments. Every large hospital should have a suitable nurses home with full amenities. In smaller hospitals separate accommodation should be provided. The ratio of trained nurses to nurses in training should be increased. Small hospitals not recognised as training schools should be staffed by trained nurses with adequate domestic help.

The report contains many other matters of interest notably discussions of the relationship between voluntary and council hospitals and of the out-patient problem.

MATERNAL MORTALITY

THE TWO REPORTS

LAST week we gave a preliminary account of the Ministry of Health's report¹ on maternal mortality. The investigation was made, it will be remembered to discover why the maternal mortality rate of this country has tended to rise while the conditions of living, the health services and expectation of life have improved. In particular the maternal mortality has been persistently greater in some districts than in others: the investigation has therefore been directed to the conditions in those and in a few control districts. It was made by study of the figures in the Registrar General's Review and of others relating to those districts extracted by the General Register Office for the investigation by inquiry into the circumstances of all maternal deaths and abortions in those districts in 1934 and by survey of the maternity services. The local inquiries were made by six medical officers of health three of whom had special knowledge of maternity services and three of health services in general. They were assisted by Sir Comyns Berkeley in a consultant capacity and by the local medical officers.

The districts visited were mainly those which in the decade 1924-33 had experienced an average puerperal mortality rate in excess of the arbitrary figure of 5 per 1000 live births. They included the administrative counties of Lancashire the West Riding Cumberland and Westmorland the 22 county districts autonomous for maternity and child welfare work in the West Riding and 14 in Lancashire the 18 county boroughs of Blackburn Blackpool Bolton Preston Rochdale Wigan Barnsley Bradford Dewsbury Halifax Huddersfield Sheffield Wakefield Canterbury Carlisle Darlington Lincoln and Plymouth. In addition for comparison visits were paid to seven districts where the average mortality rate for the decade had been low. These were the administrative county of Lincoln (Nottingham) and the county boroughs of Barrow Bootle Liverpool Lortsmouth West Ham and Haringpool.

¹ Report on an Investigation into Maternal Mortality. Ministry of Health, Cmd. 5133. London: H.M. Stationery Office, 1937. Pp. 333. 5s. 6d.

THE STATISTICS OF MATERNAL MORTALITY

The trend of the puerperal mortality in England and Wales has been slightly upward during the past ten years (Fig. 1) and the report points out that the changes in classification of deaths have not been such as to affect this conclusion. It is possible that increased accuracy of certification may have contributed but this factor cannot be assessed. A stationary or upward trend is also shown by the mortality rates in other countries and although differences in certification and classification make comparison of little value the international position of England and Wales is probably neither so completely unsatisfactory nor so near the bottom of the list as some allege. Studying the individual causes of death it appears that the rise in the total rate since about 1923 has been due to a definite increase in the rate from sepsis while that from other causes has remained about the same. The mortality from toxæmia shows an upward trend while that from hæmorrhage a decline. The increase over eight years in the rate for total abortions is about 18 per cent as compared with about 9 per cent for all puerperal causes.

Taking the whole of the 70 county boroughs of England no association between overcrowding and puerperal mortality was found. In the West Riding however the towns with most overcrowding tend to have the highest rate of puerperal mortality the three boroughs with the largest proportion of overcrowding having also the highest mortality from toxæmia. In Lancashire on the other hand the towns with most overcrowding had a lower mortality than the others and similar results were obtained for the districts of London.

On the whole the proportion of women employed in any "gainful" occupation and the rates of puerperal mortality are found to rise and fall together when the occupation is industrial the tendency is more conspicuous. In the county boroughs of England the proportion of women employed in personal service tended to be inversely related to mortality rate; thus the report points out does not mean that personal service per se is conducive to a low rate, and the association is reversed in London. The extent of unemployment seemed to be the best index of prevailing economic conditions available for general use and using that index no consistent association is found between puerperal mortality rates and economic conditions either in the same year or the succeeding year. The distribution of rainfall and of the incidence of puerperal mortality are similar (Figs. 2 and 3) but unfortunately the meteorological observations have not necessarily been made in the administrative areas to which the mortality returns relate. The statistically significant degree of correlation which exists does not mean that there is any causal relation between rainfall and puerperal mortality; the association may be merely that high rates and high rainfall occur in certain geographical areas of the country. The report says that there may also be an association between other climatic factors—sunshine temperature and humidity for instance—but the data to demonstrate this association are not available. In the areas visited deaths from puerperal sepsis tend to occur most frequently in the coldest quarter of the year the time succeeding the wettest and moistest quarter, death from toxæmia in contrast tend to occur most in the warmest quarter which succeed the driest and sunniest.

The relation of parity to risks of maternal mortality was studied from a sample of birth. Between

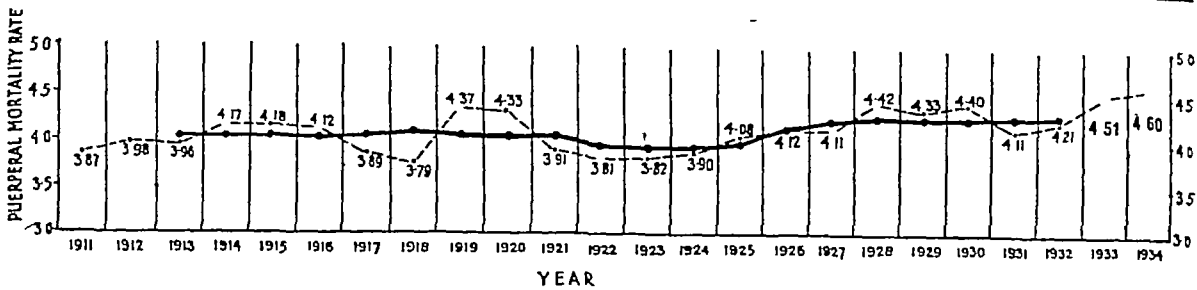


FIG 1 (reproduced from the Ministry of Health Report)—Trend of puerperal mortality in England and Wales during 1911-34 as indicated by a line representing the five year moving averages of the rates

35 and 40 per cent of legitimate and from 60 to 70 per cent of illegitimate live births were the outcome of first pregnancies, and after excluding deaths from abortion about 45 per cent of the deaths of married women are found to occur in first pregnancies. The average risk to married women who have already reached the seventh month of pregnancy is lowest in the third pregnancy and then increases progressively with birth order. The average risk of confinement at the first pregnancy is about 25 per cent in excess of the general risk for all confinements and exceeds the risk for subsequent confinements up to about the eighth, after which the risks become greater than that of a first confinement. Twin confinements are subject to a considerably higher mortality risk than those resulting in a single child. The falling birth rate has resulted during the last ten years in an increase in the proportion of first confinements and, at the same time in a fall in the proportion of confinements of women who have had many children.

The opposing effects of these changes on the total mortality risk have been almost complementary in the country as a whole so that an increase during ten years amounting to round about 1 or 2 per cent of the death rate is all that can be accounted for by fall in fertility. The rates of puerperal mortality among the wives of men classified socially according to their occupations decline in passing from professional and middle classes to the unskilled classes, this being specially evident for puerperal sepsis but not for puerperal hæmorrhage.

In several of the districts visited it was suggested that the prevalence of scarlet fever in the area coincided with prevalence of puerperal fever. On examination of the evidence the prevalence of puerperal sepsis in an individual district did not seem to depend on the prevalence of other diseases of streptococcal origin although for the country as a whole conditions favourable to a high prevalence of puerperal fever seemed to predispose also to a high

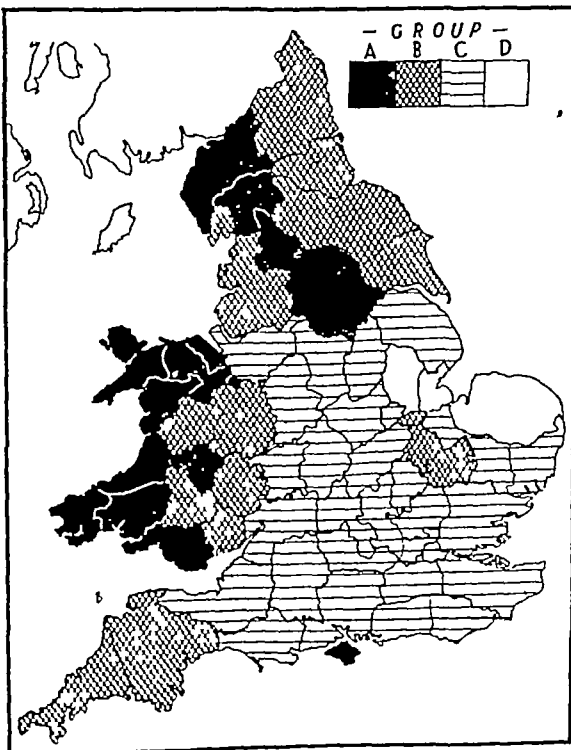


FIG 2 (from the Report)—Puerperal mortality by counties during 1924-33. Group A = rates higher than that of England and Wales (i.e. 4.21 per 1000 live births) by 20 per cent or more. Group B = rates higher by less than 20 per cent. Group C = rates lower by less than 20 per cent. Group D = rates lower by 20 per cent. or more.

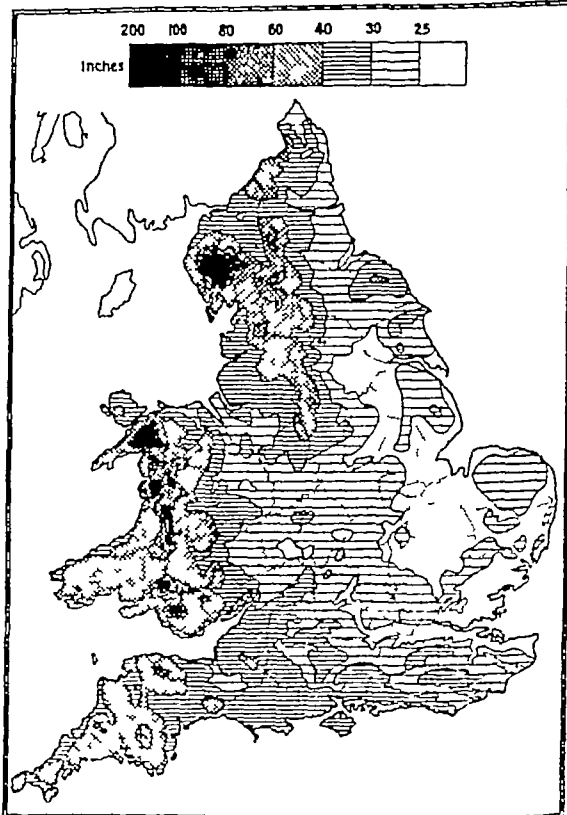


FIG 3 (from the Report)—Average annual rainfall of England and Wales (1881-1915)

prevalence of scarlet fever erysipelas and diphtheria (Fig. 4.)

CIRCUMSTANCES OF MATERNAL DEATHS IN 1934 IN THE AREAS VISITED

In all, 775 deaths were investigated, but in 3 pregnancy was found not to be present and in 2 the pregnancy was considered to be incidental to the death. All available data relevant to environmental, social, and economic conditions of the remaining 770 cases and particulars of death were collected. The deaths were classified for the most part with small modification according to the recommendations of the Scottish Departmental Committee.

Toxæmia.—There were 137 deaths directly due to toxæmia of these 73 were attributed to eclampsia. Again the greatest number of deaths was found in the third quarter of the year the financial circumstances of most of the patients excluded the likelihood of poverty and consequent lack of food being the cause. The supervision during the antenatal period was judged to be good in only 2 cases reasonably careful in 12 deficient in 37 none in 11 and unknown in 11. To pre-eclampsia toxæmia 20 deaths were assigned 10 of these occurring in the third quarter. The ages of 12 of the women were between twenty-five and forty and only 1 was over forty. 13 were primiparous. The 6 deaths from pyelitis bore out the statement that pyelitis occurs commonly in young women for 5 of them were pregnant for the first time and all of them were under twenty-nine. Hyperemesis accounted for 10 deaths undefined toxæmia for 7 and acute yellow atrophy of the liver for 6. In no less than 28 per cent. of the 770 deaths investigated toxæmia either influenced the cause or was the cause of death. It is therefore held to be a contributory factor in a large proportion of maternal deaths.

Hæmorrhage.—Antepartum hæmorrhage in which there was no evidence of abnormal implantation of the placenta caused 27 deaths, a large proportion of the women were in the higher age and parity groups; 15 were over thirty-five years old and 16 were mothers of more than four children. In 4 a history of from one to four abortions was obtained. Placenta prævia with hæmorrhage accounted for 25 deaths, again the women were mainly in the later years of child-bearing more than half being over thirty-five; 10 of the women were mothers of more than four children and 3 had had eleven, twelve and fourteen children respectively. Postpartum hæmorrhage was held responsible for 21 deaths. The report states that the records of treatment of these cases of 111 demonstrate the need for adequate coagulative and transfusion services. In six instances the early departure of the attendant after delivery

or after hæmorrhage may have influenced the issue.

Trauma and sudden death.—The 92 deaths in this group were classified into obstetric shock 43 embolism 28 rupture of the uterus 7 extensive tears of cervix vagina or vulva 3 deaths associated with anaesthetics 6 and deaths from paralytic ileus and intestinal obstruction after Cæsarean section 5. Over half of these women were between the ages of thirty and thirty-nine and also over half were primiparous but among the group attributed to shock most of the women were under thirty.

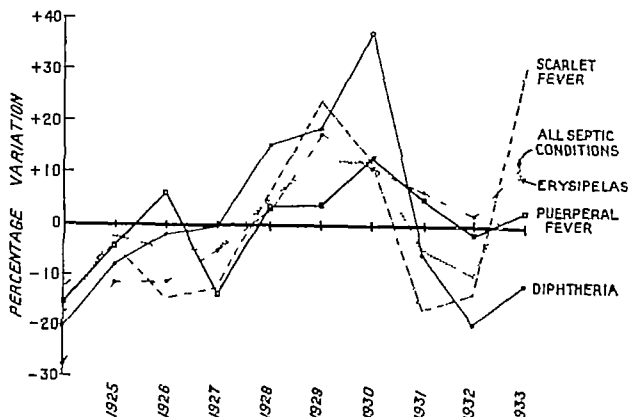


FIG. 4 (modified from the Report).—Graph showing percentage variation from the average rate (England and Wales) for 1924-33. Scarlet fever erysipelas and diphtheria = notifications per 1000 population. Puerperal fever = notifications per 1000 live birth. All septic conditions = deaths per million population.

Puerperal sepsis.—If the 84 deaths attributed to post-abortive sepsis are deducted from the total 303 of this group the remaining 219 represent 28.4 per cent. of the total puerperal mortality. The records of treatment varied considerably. Blood transfusion was stated to have been undertaken in 10 cases, and serum to have been administered in 74 while 17 women were treated by Hobbs's glycerin method. The report says that conclusions could not be drawn about serum treatment as in many cases it was not based on scientific principles; various types of sera were administered including human and serum anti-scarlet serum and polyvalent serum. In a number of instances several kinds of serum were given to one patient. Conditions which may have made septic infection more likely were present in many of the cases classified in this group as normal deliveries. Some of the women were in poor health, 23 had definite signs of toxæmia and in 37 there was laceration of the soft parts. The report discusses several aspects of obstetric practice.

Forceps were used in 140 of the 627 cases of the series reaching the twenty-eighth week; their use was unsuccessful in 27. They were applied for occipito-posterior presentation in 12 cases, breech 6, twins 2, contracted pelvis 7, antepartum hæmorrhage 11, eclampsia 13, toxæmia 4, other illnesses of the mother 10 and signs of fetal distress 1. In 14 instances the only reason given for the use of forceps was primiparity; in 20 the indication given was inertia and prolonged labour. Sepsis was the

cause of death in 43 per cent of these forceps cases

Cæsarean section had been performed in 52 of the 927 cases, earlier attempts to deliver had been made in 11 of these and in 3 several attempts at forceps delivery had been made. In some of the districts visited an obstetric specialist had not been available and surgeons with little obstetric experience had been appointed to act in their stead. They had naturally been inclined to adopt a procedure which was familiar to them, the percentage of deliveries by Cæsarean section at three big London hospitals investigated varied between 0.55 and 3.49, whereas in a hospital with a small maternity unit 27 of the 104 deliveries in a year were by Cæsarean section, while 52 cases were normal.

Condition of the infant—An attempt was made to find out the toll of infant life represented by the maternal deaths, 101 mothers of the series of 770 died undelivered and there were 127 abortions, in all, half of the pregnancies ended in the death of both mother and fetus.

The conclusion is reached in the report that in many instances ignorance or lack of co-operation on the part of the patient or her relatives prejudiced her chance of recovery. The standard of practice of midwives in some cases was considered to be unsatisfactory, the antenatal supervision perfunctory, medical assistance sought too late and procedures inconsistent with competent midwifery were occasionally adopted. The treatment in many hospitals was efficient and comprehensive, in others it left much to be desired. The general practitioner, in a patient's home and faced with problems of great difficulty, often without assistance, in unsuitable surroundings and under unfavourable conditions, many of the histories indicate that notwithstanding the handicaps, careful obstetric procedures were adopted yet sudden and unforeseen complications led to a fatal issue.

After pointing out some of the lessons to be learnt from this series of deaths the report mentions that the conclusions agree with those of the Departmental Committee of 1932, their recommendations have been implemented in the training of medical students, in the development of maternity services, and by the provision of salaried midwives, "but," the report says, "the rôle of the general practitioner in midwifery has not yet received the attention it deserves."

ABORTION

Abortion was investigated by the local inquiries into maternal deaths, by study of national statistics, and by collecting impressions. The report concludes that there does not seem to be any reliable means of estimating the incidence of abortion and that it is difficult and often impossible to differentiate in practice between a spontaneous abortion and one induced artificially. The impression was gained that the practice of artificial abortion is common and appears to be increasing, is more prevalent in some districts than others and is not restricted to any one class. In some areas the provision for in-patient treatment under expert supervision were inadequate. The dangers of artificially induced abortion do not appear to be sufficiently realised and there is urgent need for the education of women about the damage to health and danger to life from attempts to terminate pregnancy artificially. Abortion (whether spontaneous or artificially induced, but excluding cases classed as criminal) is an important factor in the puerperal mortality rate of the country since

approximately 14 per cent of all puerperal deaths are due to this cause. The statistics suggest that the trend of abortion rates is increasing more than that of other puerperal causes. The death rate from abortion is higher in the aggregate of areas with high average mortality rates than that of England and Wales as a whole. There are, of course, many more deaths from abortion among married women than among the unmarried, but abortion is responsible for a greater proportion of the deaths among the latter class and is largely responsible for the higher maternal mortality rate of unmarried women.

MATERNITY SERVICES

The report reviews the evolution of the maternity services up to the present, commenting that at present the local authorities have no say in the selection of practitioners who may be called to the assistance of midwives and to whom they pay fees. The investigators consider that only those practitioners who show special interest in and have considerable practical experience of midwifery should be called to help a midwife, instead of leaving the choice when possible to the patient in accordance with the rules of the Central Midwives Board. Brief reference is made to the excellent results obtained by the Rochdale "experiment" and to other general practitioner schemes.

The investigators suggest that the present provisions for maternity services should be amplified by the establishment, under the direction of the medical officer of health, of a service of obstetric consultants to assist general practitioners and midwives, to conduct consultative antenatal and postnatal clinics, to supervise the treatment of patients in hospitals under local authorities, to investigate the circumstances of each maternal death, and to be responsible for emergency domiciliary treatment by flying squads. They also recommend that more maternity accommodation should be provided with beds for antenatal patients, that antenatal clinics be provided in all but sparsely populated districts where provision for medical domiciliary supervision may be made. Satisfactory arrangements should be made to accommodate patients suffering from puerperal sepsis and abortion. Education of the woman and the general public should be borne in mind to obtain better co-operation, and health visitors should visit homes to encourage women to obtain antenatal care. The investigators also suggest that a service of home helps should be provided where possible and that many necessary extras such as supplementary nourishment, laboratory facilities, and sterile drums of dressings should be available as required.

The Report for Wales

The investigation in Wales was carried out on similar lines and is described in a companion report.² The death rate from childbirth was found to be high in all parts of Wales and for the decade 1924-33 the puerperal mortality was 35 per cent above the rate for England. The rates from sepsis and other causes were high. The rates in the special areas have increased substantially, whereas the aggregate in other areas show a slight decrease. On the whole, where the total death rate was high, the puerperal mortality rate was high too, and the report points out that the non-puerperal death rate in Wales is higher than that in England. It is believed that an

² Report on Maternal Mortality in Wales, Cmd 5193, London: H.M. Stationery Office, 1937. Pp 156. 2s 6d.

excess of intercurrent disease among expecting mothers has been a contributory cause in producing the high rate of anaemia and debility are common.

Doctors now attend fewer confinements than formerly. A good deal of the instrumental delivery by doctors under modern conditions of practice is considered to be unnecessary and is held to have played some part in increasing the maternal mortality. The suggestion is made that more hospital beds should be provided and at them the family doctor should have opportunity of observing the conduct of the case by the specialist in charge.

The maternity services of most of the local authorities are thought to be inadequate and in many parts of the country very little maternity work is undertaken by them. The report calls for extension of the services and attention to the general health and education of the mothers.

EMPIRE CONFERENCE ON THE CARE AND AFTER CARE OF TUBERCULOSIS

At the first session of this conference on May 3rd Lord WILLINGDON took the chair and Sir KINGSLEY WOOD welcomed the delegates on behalf of the Government. Reviewing the position of tuberculosis in England and Wales he said that until ten or eleven years ago tuberculosis stood foremost among the killing diseases in this country. Although the deaths from the disease had fallen conspicuously there was no reason to view the present situation with complacency. The improvement had been brought about by the awakening of the public consciousness to the problem by better preventive measures and better treatment. The occurrence of tuberculosis in an individual sooner or later affected the family resources, and care for the family as well as for the patient played a large part in the treatment of tuberculosis. Papworth village settlement had done much in this connexion.

Sir ARTHUR MACNALLY reviewed the change of outlook on tuberculosis which had taken place both among medical practitioners and the public in the last few decades and referred to recent advances in treatment, diagnosis and prognosis—notably artificial pneumothorax, thoracic surgery, improved radiology and examinations of the blood. The social and economic implications of tuberculosis were far reaching. Sir Penderill Varrier-Jones's work at Papworth was a great contribution but many patients were unfitted temperamentally or in other ways to live in a village settlement; their need for care had been too long neglected but was now receiving more attention from local authorities.

INDIA

Major General Sir CUTHBERT SPRAWSON (India) spoke of the peculiarities of the tuberculosis problem in India. The steady decline in mortality from pulmonary tuberculosis in Great Britain had not been experienced in most overseas countries and certainly not in India. The incidence and mortality of tuberculosis in India were really unknown because the vital statistics except for the Army and the prison population were not trustworthy nor even those relating to the large cities. The public health commissioner had recently estimated that there were about two million tuberculous people in India but this was a very rough estimate comparable to the estimate of one million for leprosy; the speaker

thought the number of cases in India was greater. The vital statistics were likely to understate the numbers because so many cases were undiagnosed and unreported. Even so the cities of Poona and Ahmedabad reported that one death out of every twelve was from tuberculosis and in Calcutta the ratio was even higher. The death rate from pulmonary tuberculosis in Ipswich was 52 per 100,000 population and in Chicago 86 while that for Calcutta the figure was said to be 240 and the real figure was probably even higher. Sir Cuthbert had estimated that some ten years ago one in every seven people in Lucknow died from tuberculosis. At any rate the number of deaths from that cause was certainly very large and there was a general feeling that it was increasing. Twenty years ago Dr Lankester an expert appointed by the Government, had reported to this effect whether the numbers were still increasing was unknown but by analogy with other countries this seemed probable. India was still principally an agricultural country but industrialisation had begun in several areas. Experience in other countries had shown that industrialisation especially if not well controlled, and free immigration of a rural population into city life were accompanied by an increase in the incidence in tuberculosis. The speaker wished to emphasise the magnitude of the danger in India and the pressing urgency of more energetic measures in the campaign.

CANADA

Dr R. E. WOODHOUSE (Canada) said that Canada was greatly influenced in practice and in the general view of the tuberculosis problem by the attitude of her cousins in the United States. Some British modifications of American practice had been made but they had as yet no Papworth. The death rate from tuberculosis in 1936 would be about 60 per 100,000 having fallen to about a third of its height of thirty years ago. The rate among North American Indians was very high about 700 per 100,000 while the rate in other parts of the population was as low as 25. In some areas there was ample accommodation free of charge for anyone with tuberculosis and there was a scheme which gave allowances to wives and creches for the children so that the wives could go out to work. While a man was in hospital the State gave the wife the same pension that she would receive if widowed. If the wife were in hospital an allowance was made to the man for a housekeeper in order to keep the family together. Dr Woodhouse felt that tuberculosis among the North American Indian could be as well controlled as among the whites if there were enough financial assistance.

SOUTH AFRICA

Dr A. D. PRINGLE (Transvaal) speaking on behalf of Dr B. A. Dörmer who was ill explained that the population of S. Africa is preponderantly native the proportions being 2 million Europeans to 7 million natives of whom 6 million are the original tribes of S. Africa. The death rate among natives was certainly alarming and the population was hard to get hold of and to treat, but he did not agree with Sir Cuthbert Sprawson that the statistics of a native population were hopeless or inadequate. In S. Africa the death rate from tuberculosis for the colour population was six times greater than for Europeans. Widely different reports were current about the incidence of tuberculosis in rural areas—a change from the tribal way of life had a profound influence on the health of the natives apart from the effects of mining and urban life.

Prof S LYLE CUMMINS (Wales) said that although the native in South Africa seemed to be very susceptible to tuberculosis the conditions of work played a considerable part in this, the women and children were not so liable to be affected as the men. It was, he thought, impossible for the State at present to finance adequate treatment, and apart from that the natives hated and dreaded being transferred from their home surroundings to marble halls and hospital regulations. A few missionary centres with crude shacks and shelters had achieved much in treating the natives, their workers seemed to have the clue to getting the natives' trust and had been able to treat natives in circumstances which they understood.

At the afternoon session Lord DAWSON OF PENN, who presided, said that the care and after care of the tuberculous claimed attention not only from the humanitarian motive of consideration for the patient but also for the sake of public health. The growth of knowledge and social conscience had preserved many lives which in themselves required every care. He did not think, however, that these patched up lives were good begetters of our future race, unless this aspect of after care were considered a great injustice might be inflicted on the generations to come.

EUROPEANS IN SOUTH AFRICA

Dr A D PRINGLE spoke of the care and after care of the tuberculous among the European mining population of the Rand and among the non mining population of the Transvaal and Natal. His subject, he said, was linked up with the history of the mining industry, which had been in existence for about 50 years. About 1903 it became obvious that a large number of employees were contracting silicotic fibrosis and tuberculosis. The deaths were mainly among men from Cornwall, Northumberland, and Wales. Since those days, four principal institutions to deal with tuberculosis had come into being: first, there was the Springkell Hospital, built by the industry and administered now by a board composed of representatives of the industry and of the Government; second, the South African Institute for Medical Research, also built by the industry. There was the Miners' Phtisis Medical Bureau of Examiners created in 1916 and made up of ten medical men, their job was to examine every applicant for employment in the mines. Every year the bureau examined 20,000 men, of whom some 60 per cent were rejected, they also examined every miner every six months, if a man contracted silicosis he was warned, if he became tuberculous he was no longer allowed to work, and the bureau furnished a report for the compensating board. The fourth institution was the Miners' Compensation Board, consisting of Government nominees except for one representative of the miners. Behind all these was the administrative body of the industry itself, the Gold Mines Production Committee with representatives from each mine. A lump sum was given in compensation to any man who developed silicosis and a man contracting tuberculosis was given a pension which was continued, if need be, to his widow and children, he was offered work on the surface. The sick miner was admitted free of charge to a hospital or sanatorium. Gold mining was, of course, a business proposition like any other and these provisions for the miners cost money, the allowance for compensation this year amounted to about one million pounds. The mortality rate from tuberculosis among miners was now no greater than that in the Royal

Air Force in this country. Of recent years non mining tuberculous patients had been admitted to the Springkell Hospital. Outside the industry there was little provision for such patients.

EFFECT OF CITY ENVIRONMENT

Dr S VERE PEARSON (Mundesley) spoke of the tendency in every country for the rural population to drain into the cities. This change in distribution of population contributed three factors to the problem of tuberculosis: much time and energy was wasted in travelling, recreation in the open air became more and more impossible, and anxiety and worry from the city environment were imposed. The death rate from tuberculosis in the thickly populated areas of Manchester was almost as high as that for Calcutta, while nearby, at the garden city of Wythenshawe, the rate was but one-third of those figures. At Letchworth the rate was lower than those for the counties of Hertford and Norfolk. Comparisons of city and rural communities had to take into account the source from which the city inmates were derived.

Dr F HEAF outlined the main purposes of the London County Council tuberculosis scheme which consisted of three parts: domiciliary, dispensary, and residential. The domiciliary treatment was regarded as the domain of the general and insurance practitioners. The dispensary service was responsible for care, after care, examination of contacts, and special forms of treatment. Residential treatment was now provided free although voluntary subscriptions were accepted. Each area had its own dispensary while the LCC arranged for all resident treatment. This dual control required much co-operation. The after care work of the dispensaries dealt with housing conditions, employment, and education for re-employment. On the whole, provision for post sanatorium patients had been sadly neglected, some boroughs had lectures in handicrafts but these provisions were small in relation to the need. For youths there was a centre at Burrow Hill for training in clerical work and gardening. The after care committee also gave advice and assistance to the patient and his family. Dr Heaf quoted an investigation made in 1926 by Sir Frederick Menzies, in which the death rates from tuberculosis in three London boroughs were compared. Although the rate for all forms of tuberculosis was highest in the poorest borough the ratio of death rates from tuberculosis to that for all causes was the same in each. Environment and social conditions seemed to have no selective effect on the relative mortality from tuberculosis. Although the actual cause of break down in tuberculosis was obscure, infection did not seem to be the chief item. Fatigue and undernourishment probably called for greater attention in a civilised, or mechanised, country. Dr Heaf quoted figures¹ showing that the average rate of incidence of tuberculosis for certain outdoor manual workers in London and the provinces was greater than that for indoor non manual workers. This was a forcible criticism of the old idea that open air was essential in treatment. The class which endured the hardest physical strain, received the lowest wages, and spent the smallest amount on food was the one most prone to tuberculosis. He could not help thinking that the vast majority of adults would remain free from active tuberculosis even if frequently exposed to infection provided they were well nourished.

¹ See *Lancet* 1936, 2 1115

and were not subjected to excessive strain physical or mental. Children on the other hand presented a different problem and demanded protection from the bacillus. Dr Heaf thought it was more important for those responsible for after care to see that the patient and his family had sufficient good food and freedom from worry rather than lay stress on a few stray bacilli.

ENVIRONMENTAL FACTORS IN CARE AND AFTER CARE

SIR PENDRILL VARRIER JONES felt that after care was the most powerful method now available in the prevention of tuberculosis. He wanted the medical profession social workers and those interested in economics to realise that after care must be linked to hospital sanatoriums. He thought the idea of environment had been inadequate. It had so often been taken to include only the material environment. Many patients contracted the disease although they had been working in good conditions the advice that good food and housing and a light job in the open air would solve all problems had to be given up. That raising the standard of living did not necessarily raise the standard of resistance to disease was shown by the present unmistakable rise of incidence of tuberculosis in young women. A definite though undetermined maximum dose of infection was necessary to produce clinical disease and the patient's resistance determined the size of this dose. This power of resistance was governed not only by material conditions and physical exercise but by a mental state. For this reason intensive research should be undertaken into the psychological aspect of the problem without delay. From his observations at Papworth Sir Pendrill was convinced that enforced idleness led to destruction of moral fibre, this aspect had been neglected by medical men who paid too much attention to the lung and too little to the organism in which it was situated. Sir Pendrill was not advocating indiscriminate exercise nor did he believe that work as a therapeutic measure acted by producing auto inoculation. In the treatment of the consumptive the environment had to have something psychological about it. It was curious how few people paused to ask why after-care was necessary. Could it be admitted that it was because we could not cure and in many cases could not permanently arrest tuberculosis? The strange thing was that the longer the case was under treatment and the more elaborate the treatment the greater the need for after-care.

Good housing was essential to enable the disease to be arrested permanently but so were a sense of well being work and a mind free from worry. Work had to be of the right kind for a middle-class or working man had something to sell and which he must sell if he is to have well being of mind. It was disastrous for the man to take on what he considered to be an inferior grade of work or to put him to a job with initiative when he had exercised none before. Many committees imagined that a patient should give his labour to the State but why should he? Labour was his only asset. Too often the medieval outlook was kept that a sick man was inferior. That was not so and frequently the tuberculous were victims of civilisation. The best that could be done for them was to try and compensate for the wrong society had done them by providing the best environment and restoring their working capacity. The result would be cheaper than hospitalisation in cash and morale.

IRELAND

(FROM OUR OWN CORRESPONDENT)

AN EXCLUSIVE POLICY IN NORTHERN IRELAND

A LAWSUIT heard in Belfast last week has drawn attention to regulations made by the Ministry of Home Affairs in Northern Ireland which restrict more narrowly than heretofore the qualifications for office as a dispensary medical officer or district medical officer of health. Until the issue of these regulations the usual medical qualifications and evidence of instruction in vaccination were the only qualifications required for these offices in Northern Ireland. The appointments were made by local boards of guardians but were subject to the approval of the Minister of Home Affairs. On Nov. 26th 1937 the Minister made new regulations which added the new condition that the officer must have been resident in the United Kingdom of Great Britain and Ireland for a period of five years prior to appointment. It had happened that on Nov. 14th 1937—twelve days before the making of the regulations—the Newry guardians had elected Dr. John Francis McGeough of Swan Park Monaghan to be medical officer of the Mullaghglass dispensary district in their union and had forwarded his name to the Ministry for approval. After some delay the Ministry refused approval on the ground that it would be contrary to the regulations of Nov. 26th. Dr. McGeough not having resided in the United Kingdom for the requisite period and directed the Newry guardians to proceed to make a fresh appointment. Dr. McGeough obtained a conditional order of mandamus directed to the Secretary to the Ministry calling on the Ministry to sanction his appointment, on the ground that the regulations having been made after his election they could not apply to him. Last week the application was made to make this conditional order absolute and it was refused by the two judges Mr. Justice Brown and Mr. Justice Megaw. The judges do not appear to have decided whether Dr. McGeough was subject to the regulations or not but holding that there was an absolute discretion as to approval resting in the Minister the issue of an order would be useless.

Apart from the consideration of the particular case of Dr. McGeough the making of the regulations has caused uneasiness among the profession in the Irish Free State. Hitherto there has been free trade between the United Kingdom and the Irish Free State as far as the medical profession is concerned. The qualifications of the universities and the licensing bodies in the Irish Free State carry admission to the Medical Register equally with the qualification granted in Northern Ireland. Conversely all those whose names are on the Medical Register can claim admission to the Medical Register of the Irish Free State. Medical men resident in or educated in Northern Ireland or Great Britain are free to be elected to any medical position in the Irish Free State and many of them hold high positions in the public medical services there. Until the framing of these regulations medical men from the Irish Free State were eligible to hold any public appointment in Northern Ireland and in common with their fellow from the overseas Dominion they are eligible for admission to His Majesty's Forces of the United Kingdom and in fact have gained distinction and held high offices in their medical services as well as in the civil service and in the service of local authorities. It would be an anomaly that Northern

Ireland should offer the only exception to this general freedom of employment. As regards many of the younger graduates who are natives of Northern Ireland the regulations may cause special hardship. Many young men from the north come to the Dublin schools of medicine for their education. On their return to their homes they will find themselves debarred from competing for public appointments, not having been resident in the United Kingdom for the requisite period of five years. It is understood that the regulations are viewed with repugnance by the medical profession in the north, and the hope is expressed in medical circles in the south that the Ministry may think fit to cancel them.

PARIS

(FROM OUR OWN CORRESPONDENT)

TUBERCULIN TESTS OF NURSES AND CHILDREN

THE Academy of Medicine has been hearing a lot about tuberculin testing. On April 6th a team of workers from the Beaujon Hospital in Paris presented a report on Pirquet and Mantoux tuberculin-testing of 100 nurses between the ages of nineteen and thirty. It was found that 23 of them were negative reactors even when large doses of tuberculin were given by intracutaneous injection. When they were classified according as they had or had not lived for many years in Paris, no difference was demonstrable in the proportion of negative reactors, but when they were classified according to age, it was found that whereas 28 per cent of those under twenty three were tuberculin negative, the corresponding figure for those above that age was only 15 per cent. This confirms old teaching that the proportion of negative reactors dwindles with age, but it seems remarkable that as many as 23 per cent of these nurses should have remained uninfected despite the countless opportunities provided by a big general hospital.

On April 13th the Academy received a report on the tuberculin testing of 1048 children under the age of fourteen—among them 119 who in infancy had been given BCG by mouth. Dr Armand Delille, who was responsible for this study, undertook it because he wanted to verify the now common assumption among his colleagues that BCG makes the Pirquet reaction positive, and that it is therefore useless to employ this test in children who have been given BCG. This assumption seems unjustified, for the proportion of tuberculin reactors was almost the same among the BCG children as among the controls. Be it noted, however, that the observation applies only to BCG given by the mouth at birth in three doses, and not to BCG given by subcutaneous injection. This communication from Armand Delille and his collaborators drew some interesting remarks from Dr Guérin, who dealt at some length with the allergic responses of the tissues to BCG given by the mouth. He was inclined to think that more frequent and larger doses of BCG given by the mouth may be advisable.

PROFESSORSHIPS IN MEDICINE

What may be described as a preliminary and quite tentative taste of immortality is the recent creation of a new class of professor—*professeur de classe exceptionnelle*. As from Oct 1st, 1937, eight professors of the first class have been promoted to this rank, which allows them to remain in office till they reach the age of seventy. The distinction has been conferred on two provincial professors, Berard of Lyons and

Boun of Strasbourg. The six Parisians are Bezançon, Carnot, Claude, Gosset, Ombrédanne, and Tiffeneau.

Another event of importance in the academic world is the creation of a new chair of medicine. Its occupant is to be professor of "*assistance médico sociale*" or "*médecine sociale*." This being interpreted means sickness insurance and all the new machinery which has grown up around it. The new professor will be expected to teach fifth year medical students the elements of *social medicine*. Such teaching should save the young medical practitioner of the future much racking of brain and insurance officials much revision of ill drafted certificates. The new professor, who will enter on his duties next October, will rank as a third class professor in the Paris faculty of medicine, and his emoluments will be 60,742 francs.

LEPROSY IN PARIS

At the end of 1934 the leprosy service of the Saint-Louis Hospital in Paris was confided to Dr C Flandin who, in association with Dr J Ragu, presented a disquieting report on the subject at a meeting of the Academy of Medicine on March 16th. When Dr Flandin took charge of this service there were only 4 lepers in it, now it houses 26, and 69 others are under his observation either at the hospital or elsewhere. There are several reasons for this remarkable rise in so short a period from 4 to 95 cases of leprosy. In the first place, the greatest tact has been shown in dealing with the lepers, who are most sensitive to being treated as exhibits for medical students. In the second place, these patients have been assured that professional secrecy will be preserved with regard to them and that no step will be taken to intern them against their wills. A third inducement to lepers to come forward and submit to diagnosis is the success here believed to result from intravenous injections of a new preparation of chaulmoogra oil and cholesterol. Among the 95 patients were 41 whites who had passed some time in the colonies, 17 whites who had been born in the colonies, and 6 whites who had never left France. The remaining 31 patients were coloured or half-breeds. Four of the Europeans who had contracted the disease in the colonies had stayed there only 4 to 10 months, their incubation period ranged from 8 months to 25 years. The enormous differences in the length of the incubation period may in part be explained by a reference to the mode of infection, the comparatively short incubation period of 6 to 8 months is to be observed in patients contracting the disease by sexual intercourse with a leper, whereas comparatively long incubation periods are the result of mere residence in a leprosy milieu. This was the case with 2 of the 6 cases of leprosy in persons who had never left France. In the remaining 4 cases the infection was conjugal. Now that it is definitely proven that leprosy can be contracted in France there may be a renewed clamour for compulsory notification and isolation, but Dr Flandin is definitely opposed to such a course, being convinced that it will defeat its own object by driving leprosy underground. The measures he favours include facilities for diagnosis and treatment at a hospital, such as the Saint Louis, which should be in touch with all the bodies working on behalf of lepers in France. In the course of the discussion following this communication to the Academy, Dr Marchoux agreed with Dr Flandin as to the undesirability of compulsory notification, and he considered the best solution of the problem to be the leprosy dispensary and supervision of the lepers by visiting nurses. His

suggestion that a commission should be appointed by the Academy to deal with this problem was accepted and Dr Flandin and Dr Ragu a report was referred to a commission on which five leading members of the Academy will sit

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

PUBLIC HEALTH IN NORTH AMERICA

ON April 3rd health officers from the several States and from the Canadian provinces began to arrive in Washington. They stayed long enough to see the famous Japanese cherry blossoms give their brief annual display around the tidal basin at the end of the following week.

The rapid expansion of public health programmes under the Security Act has thrown a great strain upon the postgraduate teaching facilities of the U.S. medical schools. Professors of public health administration and other members of the faculties were present from Harvard, Yale, Johns Hopkins, Columbia, Vanderbilt, Michigan, Minnesota, Duke, the Massachusetts Institute of Technology and the University of California. The University of Pennsylvania was represented by Miss Katharine Tucker of the School of Public Health Nursing. Short courses of training for health officers lasting for three to four months have been given as an emergency measure. Their value is variously estimated. Some educators believe that older men have scarcely time in three months to rediscover themselves in a school environment. Others felt that the courses do have a limited usefulness. All agreed that they were designed only for the emergency, but it was obvious that in some States the emergency is not yet over.

The suggestion that the long course lasting for one academic year and leading to the degree of C.P.H. might prove an expensive investment by the Government, since many of the graduates might return to private practice led to a rapid compilation by Dr Allen Freeman of the present status of C.P.H. graduates from his school. He shortly announced that of the 404 men who have taken the C.P.H. degree from Johns Hopkins only 26 have gone back into private practice. 17 are practising in the U.S. and 9 in foreign countries. Dr Haven Emerson said that Columbia University is getting an increasing number of private practitioners who study public health at their own expense but without any idea of ever leaving the private practice of medicine.

There was general agreement that despite the larger increase in the number of physicians studying public health their quality as students compared well with that of previous classes. Very general agreement was expressed also with the view that in addition to the year's training in a school of public health the would-be health officer should serve an apprenticeship in the field under the direction of an experienced administrator.

In the training of public health nurses emphasis was placed on the importance of a good basic training in nursing as a prerequisite to admission to post-graduate work. The general work of a public health nurse should also be completed before courses are offered in specialised nursing as for example in tuberculosis or syphilis. If short courses are to be given they should not be condensations of the regular course but units which can eventually be added together into a long course.

On the morning of April 5th we enjoyed two addresses by visitors from Great Britain. Dr Thomas Anwyl Davies, director of the Whitechapel V.D. Clinic was introduced by Surgeon General Parran and described to us the encouraging results of the work in London with which you must be familiar. He also spoke of his experiments with an antitoxin for gonorrhoea that has so far received no experimental confirmation in America but which is now under investigation at Columbia University. Dr Abraham J. King was introduced by Dr R. L. Wodchouse, deputy minister of health of Canada. He spoke on the public health control of gonorrhoea in Great Britain.

Dr Rufus Cole, director of the hospital of the Rockefeller Institute, reported the latest progress in the development of pneumonia serum. It is found that antibodies developed in one species of animal differ from those developed in another species, one difference noted being in regard to the size of the molecule. The molecule of the antibody developed in a rabbit is smaller than that of the antibody developed in the horse and as might be expected, the rabbit antibodies appear to diffuse more rapidly. Rabbit serum is also produced much more cheaply since rabbits are rapidly immunised and respond quite consistently. The use of rabbit serum so far has been limited but is promising.

Dr I. W. Jackson, deputy minister of health of Manitoba, gave a thorough epidemiological description of an outbreak of poliomyelitis in his province. The provision of free diagnostic service had had a most salutary effect in bringing cases promptly under care. After this service was made available treatment was commenced in every case within 24 hours of the onset of symptoms and no more deaths or cases of residual paralysis were observed. An unusual feature of the epidemic was the high rate of secondary cases in the quarantined families.

Dr Estella Ford Warner opened a discussion on the place of health education in schools and among adults. The 48 States all provide some programme of health education but there is no uniformity of practice. Insufficient use is made of the facilities of existing educational agencies. Dr Parran announced the inauguration of a consulting service of health education in Washington. A service to give advice on the progress of the science of nutrition will also be provided. Nutritionists—or specialists in this science—are employed already in several States. The need for a special division of a State health department in this field is not yet generally accepted.

THE CHILDREN'S BUREAU

I wrote a year ago of the expanding field of public health activity. Reports given by the Children's Bureau to the State health officers on April 8th marked the extent to which this expansion has progressed during the year. \$80,000 of federal funds and \$17,000 of State funds have been paid out to private practitioners for conducting clinics for well babies or for expectant mothers or for crippled children. Dental clinics have also been subsidised and 54 dentists are employed on the staffs of State health departments. Consultation services in obstetrics have been very cordially welcomed by the practising profession and in several States antitoxins conducted by members of university faculties in obstetrics or pediatrics have been well attended. Important recommendations were adopted at this session looking to analysis of the causes of maternal deaths by the State health department in co-operation

with the State medical societies with a view to raising the standards of obstetric practice, and also to the public employment of "qualified" nurses for maternity service. The American method of attacking the problem of providing medical care for the indigent begins to shape itself. Care will come in categories. The tuberculous, the syphilitic, the insane, are already widely recognised as social responsibilities. Cancer is being added. Heart disease is recognised in some States. New York and Massachusetts have broached the case of pneumonia. The work of the Children's Bureau extends the conception of social responsibility to obstetrics and paediatrics. The full time medical employees of the State and Federal Government will not increase greatly in numbers, but will as rapidly as possible be raised to higher standards of professional qualification, and it is to be hoped will be removed further from partisan political influence and given greater security of tenure. In the growth of this programme the help of the private practitioner will be sought and will be rewarded. Every effort will be made to see that he, too, has opportunities to keep abreast of the times and to improve his professional technique. If health insurance has any place in this American scheme it will only be as one far from dominating feature of the whole plan. Probably it will be tried out first on a small and experimental scale, to be judged by its ability to conform to the general outline of the larger plan of what has been described as "limited State medicine with private practice."

VIENNA

(FROM OUR OWN CORRESPONDENT)

WELFARE OF THOSE WITH HEART DISEASE

A COMMITTEE consisting of the foremost pathologists, medical men, and philanthropists, and also including the leaders of the Government and the Church, has recently founded a Society for the Welfare of Heart Patients, which at first will be active in Vienna itself, but will soon be able to extend its scope to the whole republic. In the pamphlet issued by this society, competent authors point out that the statistical data prove the alarming increase of cardiovascular trouble amongst the population. Whereas formerly tuberculosis and neoplasms were the principal causes of death heart disease now heads the mortality statistics. A few figures will serve as illustration. In 1932 there died in Austria 28 62 persons from tuberculosis against 86 26 who succumbed to cardiovascular diseases (per 10,000 living). The percentual picture is the following. In 1905 10.4 per cent of the deaths were due to tuberculosis and as many to heart disease, in 1932 only 7.5 per cent died from tuberculosis, but 22.7 per cent from heart disease. Thus in 27 years the mortality in the one had decreased by 30 per cent but in the other it had doubled. Furthermore, investigation amongst apparently healthy labourers showed that 15 per cent of all factory hands aged 20-30 had more or less definite symptoms of circulatory disturbance. In the age group 50-60 this figure went up to 65 per cent, in other words, two thirds of these persons doing physical work during their adult life have suffered definite damage to their cardiovascular system. A follow up of patients observed in the Vienna Herzstation within the last two years has proved that 17.5 per cent were incapacitated in their occupation or profession.

This was due partly to the disease itself, partly to social, economic, and dwelling conditions, such as lack of means to buy expensive medicines, and living in high storied houses without a lift, with overcrowded rooms and want of rest and quiet. The new society has therefore decided to make the following its aims: the erection of special homes for heart disease, with sanatoriums providing appropriate rest and exercise, the training of special nurses, and instruction of heart specialists, the collection of funds for future improvements, including the setting up of welfare centres in the country, of ambulatory classes for instruction of affected persons, and of a special museum. This society will of course coöperate with the existing clinics and similar welfare centres, to prevent double track work.

AN INTERNATIONAL CONGRESS

Under a patronage of the Austrian Federal Government, and with Prof d'Arsonval and Marchese Marconi as honorary chairmen, the first International Congress on Short Waves will be held in Vienna on July 12th-17th. Its transactions will deal with the relationship of short waves to physics, biology, and medicine. In the first section, therefore, the congress will discuss their properties, generation, conduction, detection, and measurement, their action on chemical systems, and finally the different methods of application and the uses of short waves. The biological section will bring papers on the action of short waves on plants and animals, on tissue cultures, on enzymes and ferments, and on their thermic effects. The third section will discuss the indications and contra indications of short wave therapy in the various branches of medicine and surgery. All the latest achievements and the technical methods and apparatus will be described. There will also be social functions, and interesting excursions through the Alps will be provided for the members. The secretary of the congress, Dr Liebesny, may be addressed at his office in the Vienna Allgemeines Krankenhaus.

A DOUBLE CHANGE OF SEX CHARACTERS

At a recent meeting of the "Gesellschaft der Aerzte," Prof Nowak and Dr Wallis demonstrated an unusual and interesting condition in an unmarried woman aged 32. Two years ago her hitherto regular menstruation ceased and considerable changes in her appearance took place. The growth and distribution of her hair became masculine in type, the face became coarse, the voice deep, the muscles firmer, and the clitoris grew in size. Besides this an extensive acne appeared on the body, the typical fat deposits disappeared, and the mammae diminished in size. The effect was a very noticeable masculinisation of the woman. More detailed examinations showed an increase of erythrocytes (8,600,000), a rise in blood pressure to 145 mm Hg and in blood sugar to 150 mg per 100 ccm. Folliculin could not be detected either in the urine or in the blood, and prolactin was also absent in the urine, but on the other hand no masculine sex hormone was discovered. The patient was found to be suffering from a tumour of the right ovary, which was removed. Four weeks after the operation menses began again and have since remained regular. All the masculine attributes soon receded, the voice and the habitus becoming once again female in type. This included also a drop in the erythrocytes, in the blood pressure and blood sugar. Folliculin could now be found in the urine in normal quantity, but prolactin remained absent. The histological examination of the tumour proved it to be built up of the so called interstitial cells but its

histogenesis is not yet clear. This case of sex alteration with increase of blood pressure of the number of red blood-cells, and with hyperglycemia is most likely to be a case of "interrenalism." Probably the tumour that was removed from the ovary originated from isolated cortical adrenal tissue; such tumours are not uncommon and their effect on the sexual status is well known. In this case however histologists could not agree about the

exact nature of the tumour. Since the adrenal cortex and the tissue of sexual glands originate from the same matrix it is possible that in certain instances a tumour can form from this fundamental substance, which differs from the adrenal gland and the sexual gland but contains functional qualities common to them both. A remarkable feature in this patient was the rapidity with which the changes took place in both directions.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half yearly index.

FROM A MEDICAL ECONOMIST

II

KINGS are anointed with oil for the same reason as sacrifices used to be anointed—to ensure burning. The symbolism in these days, is obscure but in earlier days all men understood and approved.

In earlier days a king was his people's most valuable possession. This was no embellishment of courtiers; every man knew it. Every man saw in the King's grace his own dearest interest and was eager therefore, that the utmost honour should be accorded to Majesty. It may sound an overstatement but it is a sober fact that only those peoples could be strong and secure who possessed good kings.

The point is worth making at a moment when it seems to be generally accepted that the world is faced with a choice between democracy and dictatorship. What is democracy? What is dictatorship? And how does it come about that these two exhaust all the political possibilities? The answer which is commonly given is that in fact, there is no third choice because a constitutional monarchy is a form of democracy whereas an autocratic monarchy is a form of dictatorship.

* * *

This it is worth recalling was not Disraeli's view. That great statesman proclaimed that monarchy was not only the most recent historically of all forms of government but was also so exalted a form that only men of real understanding could measure its worth. He was not speaking of constitutional monarchy—he was certainly not speaking of the kind of monarchy which for example the Tarquins bestowed upon Rome. What Disraeli had in mind was a king whose power proceeded in the first instance from himself alone without reference to armies of parties or factions—without reference even to popular election. Ibsen had the same idea. He made one of the characters in one of his historical plays declare of a Norse king that he possessed the king thought.

It is a matter of knowledge that dictators are always party leaders. They command a class—whether the army or the nobility or the merchants or the proletariat or persons of some special political complexion. The dictator has come to power as a rule because his party has come to power. He acts for and by his party and professes to see in its philosophy the only means of national salvation. If he is a soldier the moral virtues of soldiers are exalted and the structure of society is remade on military lines. If on the contrary he is the leader of Jacobins or Bolsheviks the opponents of these factions will be attacked and destroyed.

Parties however parties of the Right as well as parties of the Left have one feature in common—all possess secret funds. None except a small circle knows who are the subscribers to the party funds and none therefore can really say whether or not the policy of the party is sincere. The chief subscriber to a party of the extreme Left, for example might be a millionaire of the extreme Right and that fact might be known only to a handful of party managers—it is conceivable even that not a single manager might know the real source of the support. But what would happen in such a case would be that if the party began to act in a way contrary to its backer's wishes, its money would evaporate and all its officials would be ruined. In such circumstances a break up of the party could scarcely be avoided.

It is when dictatorship is viewed steadily from this point of view that its likeness to rather than its difference from some forms of democracy becomes apparent. Democracy consists usually of a group of parties each possessed of financial backers. Dictatorship arrives often enough when one of these parties savages all the others by reason of its more substantial backing or because the backers of the opposing parties have withdrawn their support.

It will be objected that parties compete for popular support and cannot be returned to power unless they secure it. But popular support in these days of mass electorates means propaganda on the great scale and propaganda on the great scale is exceedingly costly. Unless a party possesses backers it cannot hope to win. It does not follow of course that all backers are interested persons. The backers of a party may be as sincerely convinced of the value of its aims as the humblest members. Nor need they necessarily be rich men. The point is that there must be backers of one kind or another if the party is to come to power and this applies to military as well as to civil parties.

The dictator therefore like the democratic government is elected on what Americans call the party ticket and will be compelled to consult the interests of the party. This will be easy for him so long as party interests and national interest are the same or rather so long as he remains convinced that they are the same. But it is always on the card that an issue may arise whereby the party and the nation are set in opposition. In that hour the dictator will have to choose between the body which made him dictator and the people upon whom his leadership has been imposed whether by force or by persuasion.

It is a choice which comes sooner or later to almost every dictator. It came to Cromwell weary of the tyranny of Parliament in arms who wanted to make himself King of England and would have done so had not the Iron sides prevented him. It came to

Robespierre when, sickening of the Terror, he tried to quell the Jacobins. The Jacobins destroyed him and historians ever since have pointed the moral that revolutions tend to eat their own children—an erroneous reading. It came later to Napoleon, when he felt himself being forced back upon the soldiers of the Revolution. He succeeded in bringing all the parties, including the soldiers of the Revolution, into subjection. One modern dictator is now experiencing the same choice and has turned against the old guard of the Communist party—successfully as it seems. Another a few years ago attacked and broke the old guard of his own party. The old guard of the Democratic Party in the United States continues to assert that the President has undermined the party's position and strength.

That these are events of great significance few will dispute. What do they mean? The dictator who refuses to obey his party and its backers can look for support in one direction only—namely, the nation. Only if he can secure the nation's support can he hope to survive.

* * *

It is matter of history that the support of nations is given to very few men and that these men bear, always, a close likeness to one another. That likeness does not reside in intellectual power, though intellect is usually highly developed. Rather it is an emotional quality of rare and potent nature by which a man is able to make himself the beloved and trusted of millions of his fellows. I do not doubt that Ibsen was right when he declared that only he who possesses the King thought can exercise such power. In other words the power belongs to the leader and proceeds out from him to the people. Disraeli identified this power with love and looked upon Kingship, in consequence, as a marriage of one man to a nation.

The King was the people's bridegroom. Like a bridegroom he was ready—and the people knew it—to sacrifice himself for them. His people called him lover and father and made his consecration manifest by anointing him with the sacrificial oil. "The grace of God in a King," said Pope Gregory the Great, "is the power to protect the sheep from the wolves. If a King does not possess that power he is without grace and is no King." Napoleon said the same thing in different words. "Without a King there is no people, there are only parties. The party with the most money wins when it has to reward its financial backers."

The King then is a leader who has wooed and won his people by virtue of his King thought. This is no party dictator nor popularly elected party chief, but a being in ecstasy who, by mystical process of love, has ceased to care for self or safety and become father and comforter. Every notable man in the land will now be forced to serve the people, for King and people united are irresistible. For this reason symbolism set crowns also, the garlands of sacrifice, on noblemen's brows. For this reason noblemen who attempted to oppose the King, to seize their lands in absolute title, and to make of their folk serfs and chattels, were attacked by Majesty. For it was, as it is, the first business of a king to bend all the notable men, the barons, to the people's service.

There is the world of difference between Kingship in this real sense and representation. It is obvious that power cannot, in fact, originate with the people since, without leadership, the people is helpless and falls, always, into the hands of wolves. But it is equally obvious that without the people's love the king is helpless. King and people therefore are one, like father and children. It is the King who creates the people since it is his King thought, his word, which is made flesh in them.

PANEL AND CONTRACT PRACTICE

The Practitioners' Fund

THE negotiations for an increased capitation fee as well as the controversy regarding the payment in respect of the 14-16 year adolescents has focused attention upon the capitation fee. There are few practitioners, if any, who receive from their insurance committee exactly nine shillings multiplied by the number of persons on their list in any year and, doubtless, many have wondered exactly how their remuneration is calculated. Many committees send out a detailed statement with each cheque, but this, after all, merely explains the distribution of the areal practitioners' fund and not how the fund itself is calculated. The chairman of the London medical benefit subcommittee has just answered a question on this subject at a meeting of the insurance committee, and his reply provides a concise statement of the method adopted in calculating the practitioners fund.

The method by which the amount of the areal practitioners' fund is arrived at is broadly speaking as follows. Out of the sums available for medical benefit the central practitioners' fund is set up at the beginning of each year. It is calculated on an estimate made by the government actuary of the number of insured population entitled to medical benefit multiplied by 9s. The estimate is arrived at mainly on the basis of sales of health insurance stamps. The final amount of the central practitioners' fund is not known until after the end of the year, but each year the committee are notified during February of the

amounts which may be distributed quarterly within the final determination of the fund. The balance usually becomes known towards the end of February in the succeeding year, and a final settlement is effected as soon as the necessary calculations can be completed.

The central practitioners' fund is distributed among insurance committee areas by the Minister of Health after considering the report of the medical distribution committee which consists of representatives of insurance practitioners, of insurance committees, of the government actuary, and of the Ministry. This committee have before them particulars as to the insured population in each area (this being based upon what is known as the count of the index register). It is their duty to make a fair and just apportionment of the total fund between the several areas. They take into consideration such factors as the incidence of temporary residents (this in London invariably means a deduction but in some areas it causes quite an appreciable addition). Deductions are also made in respect of insured persons obtaining medical benefit through approved institutions and making their own arrangements, and also for members of the mercantile marine. A final net proportion is then ascertained and the central practitioners' fund is distributed on this basis. The areal practitioners' fund has to be distributed among practitioners on the basis of their respective figures of credit, but even here there are various adjustments to be made—e.g., in respect of the administrative

expenditure of the local medical and panel committee and of payments to practitioners for the cost of the provision of anaesthetists and emergency treatment.

It will be clear that although at the source the central practitioners fund has been based on an estimate of the insured population multiplied by 9s the areal practitioners fund as calculated does not necessarily represent the local insured population multiplied by 9s it may be either above or below this figure. In the administrative county of London up to 1933 the unit value was actually less than the nominal 9s value but the clearance of the medical register which took effect as from Jan 1st 1934

reduced the number of units of credit upon which practitioners remuneration was based without affecting the calculation of the areal practitioners fund. The result was that whereas for 1933 the value of a unit of credit in London was 7s 11-40524d in 1934 the equivalent value was 8s 7-4032d. This was at a time when economy deductions were being made from the remuneration of practitioners. For the year 1935 the figure rose to 9s 1-17192d but this increase was accounted for mainly by the restoration of the economy deduction of 5 per cent which operated only for the first six months of that year. For the year 1936 the total payment will amount to 9s 2-5254d.

CORRESPONDENCE

AMBULANCES AND STRETCHERS

To the Editor of THE LANCET

SIR—I am glad that Dr Lockhart noticed my letter because it was his letter published in your column two years ago which stimulated my interest in this subject.

I quite agree with him that the universal adoption of a standard stretcher with telescopic or folding handles would simplify our problem but I do not think that the fighting services of any nation would agree. They would not consider such stretchers capable of standing up to the rough usage of war. I realise the great advantages of short stretchers when it comes to carrying them in lifts railway-carriages air ambulances and boats (we in the Navy have a short stretcher) but I cannot envisage the abolition of long stretchers and I still think that ambulances capable of carrying long or short stretchers should be adopted where practicable.

Standardisation of gauge as Dr Lockhart points out is essential.

I am Sir yours faithfully

R. A. W. FORD

R.M.S. Hood May 3rd Surgeon-Commander Royal Navy

INSULIN AND GASTRIC SECRETION

To the Editor of THE LANCET

SIR,—At a meeting at the Royal Society of Medicine on March 9th Prof E. C. Dodds and Dr R. J. Noble reported observations on the action of insulin on the gastric secretion of cats. Having several years experience with insulin as meal for fractional tests I should like to bring out the following points.

1. Insulin stimulates gastric secretion sufficiently to enable one to discriminate between pseudo-acidity and true acidity just as often as one can with histamine.

2. The stimulus to the stomach is the hypoglycaemia, acting through the vagus (as stated for example by Heller¹ and by Dodds and Noble² but questioned by Meyer³). The test is therefore not suitable for diabetic patients.

3. Whereas histamine sometimes produces undesirable side-effects which may be difficult to overcome the insulin test using the doses stated below rarely causes symptoms requiring treatment. In the few cases which developed hypoglycaemic symptoms (1) at were at all serious I have nearly always been able to control them by oral administration of sugar and it has very seldom been necessary to give intravenous glucose injections.

¹ Dodds E. C. and Noble R. J. (1935) *Proc. R. Soc. Med.* 30, 815, see also *Lancet* March 20th, p. 692.

² Heller R. (1931) *Med. Klinik* 27, 1451. (1931) *ibid.* 27, 1451.

³ Meyer I. F. (1930) *Klin. Wochenschr.* 8, 1578.

4. It is an advantage that the secretion obtained is not mixed with any fluid given as test stimulus.

5. The optimal amount of insulin was found to be 12-15 units (Heller¹). The secretion starts about 20-40 minutes after intravenous (or about one hour after subcutaneous) injection. In patients with normal gastric secretion 55-75 are the highest values for free acidity and 75-85 the highest values for total acidity.

6. The stimulating action of insulin on the gastric secretion shows that the administration of insulin is contra-indicated in fattening cures in patients with hyperacidity.

Each of these points has already been made by Meyer and/or Heller.

May I take this opportunity to remind your readers that in distinguishing hyper from hypo glycaemic coma a positive Babinski sign proves the coma to be hypoglycaemic. Whereas the differential diagnostic value of flaccidity in hyper and of spasticity in hypo glycaemic coma is mentioned in many text books and papers a reference to Babinski's sign is very rarely to be found.

I am Sir yours faithfully

HERBERT LEVY

Telford Avenue Mansions S.W. May 1st.

PRURITUS ANI

To the Editor of THE LANCET

SIR,—Surgical news about pruritus ani is as attractive as it is varied and the announcement in your issue of April 17th of the pruritic stage of pruritus ani is quite delightful. I suspect that Mr. Riddoch wrote his article with his tongue in his cheek but he has allowed fiction so heavily to outweigh fact that some little protest must be entered. The codema of the skin which might seem to give the stamp of reality to his theory is in fact the finding common to all itching and rubbed skins though it is more readily provoked in the skin of the genitalia and perineum and of the areola. It is not true that itching is apt to occur more frequently about the various body orifices than elsewhere; it is not even true of the vulva and anus; it is less true of the ears nose mouth and urethra. Does Mr. Riddoch seriously suggest that X-ray therapy is curative because of its destructive effect on the vessels? This is alarming.

With the courage characteristic of the surgeon he dismisses the psychological side of the problem but Carlyle was wiser than Mr. Riddoch imagines. There is no doubt of the pleasure associated with itching especially anal itching, as the majority of subject with pruritus ani will confess. Indeed it is the

indulgence in this pleasure which too often creates the habit which is so difficult to break.

I am, Sir, yours faithfully,

Leeds, May 3rd

JOHN T INGRAM

To the Editor of THE LANCET

SIR,—In your last issue Dr Browne Carthew mentions that I did not refer to radium in the treatment of pruritus ani. I could not possibly mention all the various forms of treatment that have been tried in this condition and I have come across only one reference to the use of radium (O'Donovan, W J (1936) *Practitioner*, 136, 148). However the fact that O'Donovan claims good results from its use, coupled with Dr Browne Carthew's remarks, lends further support to my thesis. Well over 90 per cent of cases can be cleared up by the simpler method of sclerosing injections in the internal hæmorrhoidal area if these are efficiently carried out, and the remainder must be dealt with to suit the individual case, as for example when one has to stretch a fibrosed anal canal or remove tags or fibrosed internal hæmorrhoids, &c., as well as destroy the subcutaneous veins by undercutting of the skin, sclerosing injections, or possibly radium.

I am, Sir, yours faithfully,

Birmingham May 4th

J W RIDDOCH

PERNICIOUS ANÆMIA IN AN INFANT

To the Editor of THE LANCET

SIR,—I was interested to read in your issue of May 1st an account of a case of macrocytic anæmia which occurred in infancy in association with achlorhydria and high icterus index and which responded rapidly to treatment with liver. I venture to doubt however whether the authors are justified in labelling the case "pernicious anæmia," and I would suggest that it is one of subacute hæmolytic anæmia.

During the past few years macrocytosis has been recognised and described in an increasingly large number of disorders of the blood. In a series of hæmolytic anæmias in infancy and childhood admitted to the wards of the Birmingham Children's Hospital and to be published shortly, I have observed several examples of macrocytic anæmia some of which have failed to respond to transfusions of blood or the administration of iron. They have, however, reacted well to treatment with liver, as did the case described by Prof Langmead and Dr Doniach. In each case treatment with liver was discontinued after complete hæmatological recovery, but the anæmia did not relapse. This fact differentiates the pernicious like picture of subacute and chronic hæmolytic anæmia from true Addisonian pernicious anæmia, for in the latter condition the anæmia will always recur unless sufficiently large doses of a potent liver preparation are given regularly. Time and further blood examinations alone will tell whether or not the case of Prof Langmead and Dr Doniach can be accepted as one of true pernicious anæmia of infancy.

I am, Sir, yours faithfully,

W CAREY SMALLWOOD

The Children's Hospital Birmingham May 3rd

PRISONERS AND CAPTIVES

To the Editor of THE LANCET

SIR,—I regret having to inform Dr Vasefield that I weighed my Grains and Scruples very carefully indeed. The result was disconcerting. However, I can relieve his distress in at any rate one respect, my criticism was, and is, directed at the system,

not directly at any of my medical colleagues. The system does seem to me to be needlessly cruel, in that it shuts away indefinitely young people who are a danger neither to themselves nor to anybody else. And—thus I feel acutely—few, not being official people, ever see the inside of the institutions referred to. Official people, however humanitarian, tend to become more and more official, specialists, however kindly, do come to look through ever narrowing spectacles.

I know, from bitter experience, that it is infinitely more easy to get a young person into an institution for the mentally defective than it is to get him out. I am convinced that there are, at this minute, young people in such institutions who would be better in every way if they were outside. I interviewed one of them recently in an institution.

There are some of us who feel, strongly, that all is not well. That is why I wrote as I did, and why I hope to write further when, and where, the opportunity arises.

I am, Sir, yours faithfully,

April 30th

TADDYGADDY

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED APRIL 24TH, 1937

Notifications—The following cases of infectious disease were notified during the week. Small pox, 0, scarlet fever, 1647, diphtheria, 1027, enteric fever, 32, pneumonia (primary or influenzal), 804, puerperal fever, 41, puerperal pyrexia, 114, cerebrospinal fever, 23, acute poliomyelitis, 3, acute poli-encephalitis, 2, encephalitis lethargica, 4, dysentery, 33, ophthalmia neonatorum, 111. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on April 30th was 3140 which included Scarlet fever, 846, diphtheria 904, measles, 45, whooping-cough, 608, puerperal fever 13 mothers (plus 10 babies), encephalitis lethargica 284, poliomyelitis 1. At St Margaret's Hospital there were 21 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths—In 123 great towns, including London, there was no death from small-pox or from enteric fever, 12 (0) from measles, 5 (2) from scarlet fever, 22 (7) from whooping-cough, 30 (3) from diphtheria, 30 (12) from diarrhoea and enteritis under two years, and 47 (5) from influenza. The figures in parentheses are those for London itself.

Four deaths from measles were reported from Kingston upon Hull, 5 deaths from influenza at Birmingham. Liverpool had 4 deaths from diphtheria and 3 from Manchester. There were 4 deaths from diarrhoea and enteritis under two years at Birmingham and 3 at Newcastle-upon Tyne.

The number of stillbirths notified during the week was 201 (corresponding to a rate of 41 per 1000 total births), including 53 in London.

MEDICAL CONFERENCE IN SWITZERLAND—A third international medical week has been arranged by the *Schweizerische Medizinische Hochschrift* and will be held at Interlaken from August 20th to Sept 4th. The speakers will include Prof Hugh Cairns (results of treatment of intracranial tumours), Prof Clovis Vincent, Paris (treatment of subacute and chronic abscesses of the brain), Prof O Loewi, Graz (the chemical transmission of nerve stimulus), Prof K I Anselmino, Wuppertal Elberfeld (relation of the pituitary to carbohydrate metabolism and to diabetes), Prof L Lichtwitz, New York (disturbances in the regulation of carbohydrate metabolism), and Prof H Spemann, Freiburg in Breisgau. Further information may be had from the secretariat, Klosterberg 27, Basel.

OBITUARY

SIR PATRICK HEHIR K.C.I.E. FRCP,
F.R.C.S. F.R.S. Edin
MAJOR-GENERAL, I.M.S.

Sir Patrick Hehir who died on Saturday last May 1st at Hove, was a distinguished member of the Indian Medical Service holding at different times high and responsible office and being deeply interested in both the social and scientific side of tropical medicine.

Patrick Hehir was the son of Robert Martin Hehir of Ennis Co. Clare. He received his medical education in Edinburgh and at Guy's Hospital qualified as M.R.C.S. Eng. L.S.A. in 1885 and took the diploma of F.R.C.S. Edin. in the same year. He graduated later as M.D. Brux.



SIR PATRICK HEHIR

(Photograph by Elliott & Fry)

He joined the Indian Medical Service in 1886 and immediately saw service in Burma and Tirah. He was engaged in the latter campaign during 1897 and 1898 and received a medal with clasps. He was next serving on the Mohmand expedition but in 1898 returned to Burma as Assistant Director of Medical Services. Shortly afterwards he was transferred to Poona holding the same position in the Bombay presidency while at the outbreak of the war he was at headquarters Simla, as Deputy Director of Medical Services. He was therefore a very experienced officer when his eventful career during the war commenced. He was engaged in the campaign in Mesopotamia and was several times mentioned in dispatches for his excellent work. At the surrender of Kut he was taken prisoner by the Turks and until his release did valuable work in caring for the sick and wounded especially the Indian contingent. Released by the Turks he took up his appointment at headquarters in India as D.D.M.S. and in recognition of his fine work received the orders of C.B. and C.M.G. In the second Waziristan campaign he was again to the front as D.D.M.S. and in 1919 further hostilities in Afghanistan gave him an opportunity of earning credit for he was mentioned in dispatches and promoted K.C.I.E. having received the C.I.L. the previous year.

Throughout his long service in India Sir Patrick Hehir was engaged in efforts scientific and social to prevent and control malaria in India. He made many personal researches into the life history of mosquitoes and in 1910 produced his work *Trophylaxis of Malaria in India* in which he went with much detail into the methods employed by the malaria antiquarian in towns and country. The results of this work with many additions and with cooperation from numerous authorities were published after his retirement in a comprehensive volume entitled *Malaria in India*. This book not issued

until 1927 detailed the general history of malaria its geographical distribution in India its contributory causes prevalence and mortality. It furnished a very full history of the habits of Indian anopheline; this section of the work being supplied with a large quantity of admirable illustrations. The clinical history and diagnosis of malarial fevers and the various methods of prevention were all set out and among a group of appendices important matter was added bringing the subject up to date. The work was the outcome of much personal knowledge and great industry calling the attention of the economists and statesmen to the many sides of a menacing problem. Its production was a fine exploit during the closing years of a distinguished career.

Sir Patrick Hehir in addition to the distinctions enumerated, possessed the life-saving medal of St. John of Jerusalem, was a Knight of Grace of the Order and a F.R.S. Edin. He married in 1908 Dora a grand daughter of Edward Lloyd who founded the *Daily Chronicle* by whom he had one daughter. He was in his 78th year at the time of his death.

GEORGE PARKER M.D. Camb

We regret to announce the death of Dr. George Parker consulting physician to the Bristol General Hospital and a physician of distinction well known outside his immediate circle.

He was born at Claverdon Warwick the son of Mr. George Parker. He was educated at Stratford on Avon and St. John's College Cambridge where he had a successful academic career graduating as B.A. in 1877 with honours in the History and Moral Science Tripos. He was an assistant master at Rugby for a short period and then went to St. Bartholomew's Hospital for medical training. He graduated as M.D. Camb. in 1880 proceeding to the M.D. degree in 1881. He followed a post-graduate course in Vienna and held several resident appointments being medical officer to the Paddington Green Children's Dispensary and the Bristol Dispensary before going into practice in Clifton in 1887. He was appointed assistant physician to the Bristol General Hospital in 1892 and was a member of the staff until his retirement on seniority and election as consulting physician. He was an important member of the University of Bristol lecturing in particular on medical jurisprudence a subject in which he was at one an examiner at the University. He had marked literary gifts wrote a history of surgery in Great Britain showing his antiquarian knowledge and delivered the Thomas Vicar's lecture before the Royal College of Surgeons of England.

We owe to Dr. I. A. Burrell the following appreciation: During the years 1892-1893 of his association with the Bristol General Hospital as assistant and full physician his friendly personality endeared him to all with whom he came in contact—perhaps one would not say for forcefulness of character but rather for the frankness of his nature and approachability was he so liked. He was appointed to the visiting staff of the Bristol General Hospital in 1892 becoming full physician in 1901. He was president of the Association of Physicians when that body met in Bristol and of the Bristol Medical-Chirurgical Society in 1916. Being particularly interested in the various manifestations of chronic rheumatism and osteoarthritis he had charge of the

physiotherapy department of the hospital from 1901 until his retirement, doing much work, and making contributions to literature, upon these maladies. As a consultant he came to be regarded as always giving of his best, with a most likeable unaffected straightforwardness, and would spare no pains to do the utmost for the patients coming under his supervision, often, as the nature of their ailments so frequently required, for lengthy periods. For many years he had a very large following of outpatients, by whom he was greatly beloved for the individual interest and sympathy which he extended.

"Outside his work he was keenly interested in archaeology, and, since his retirement from the active hospital staff, went out on several occasions as medical officer to the Flinders Petrie Expedition in Syria. Of late years, too, he became greatly interested in the University medical library, acting as honorary librarian until his death. With great courage he persisted in his activities in spite of a progressing physical enfeeblement leading to the end. His death is a sad loss to many, his contemporaries and a host of others will retain affectionate memories of him."

JOHN DALLAS EDGE, C B, M D R U I, F R C S I

MAJOR GENERAL R.A.M.C.

THE death occurred on May 1st at his home in Dublin, at an advanced age, of Major General John Dallas Edge, whose military record was a remarkably fine one. He was born in 1848, the son of the late Joseph Edge of Timahoe, Queen's County, and received his medical education at the Meath Hospital, Dublin, graduating as M.D. R.U.I. in 1870. He entered the Royal Army Medical Corps at once and was attached to the 1st West India Regiment. The regiment was stationed at Orange Walk, British

Honduras, and shortly became the centre of a fierce little Indian revolt. The military commander was wounded, and young Edge took his place and successfully organised the defence, being specially promoted for gallantry. In the Zulu war of 1879 and in the second Afghan war which followed rapidly, Edge was again in the thick of the fighting, and for his work at Mawand and Kandahar he received the thanks of the Government of



MAJOR GENERAL EDGE

(Photograph by Elliott & Fry)

India. In 1882 he was serving in Lord Wolseley's expedition to Egypt, was present at Tel el Kebir, and was again a marked man for the value and bravery of his services. He received the Tel el Kebir medal with clasp and the Khedive's star. The outbreak of the South African war found Edge a lieutenant colonel and with that rank he accompanied Sir Redvers Buller's army to Natal. He was present at the battle of Stormberg and was responsible for removing the bulk of the wounded from the field in circumstances which required much and deter-

mined bravery. He was promoted colonel, awarded the C.B., and at the end of the war was appointed P.M.O. of the South African Command. On return home he became P.M.O. of the Irish Command and retired in 1908 on the age limit. At the outbreak of the European war he volunteered for service despite his seniority, and was placed in charge of the Queen Alexandra Military Hospital with the rank of major general, a post which he held until his second retirement in 1917.

Major General Edge married in 1890 Jane, daughter of John Ruskell of Arklow, Co. Wicklow, by whom he had one son. He had reached his ninetieth year

JOHN GALLETLY, M B, C M Edin

THE death occurred on April 10th of Dr John Galletly, well known in South Lincolnshire for his activities in the promotion of public health. He graduated as M.B., C.M. in the University of Edinburgh in 1886, having already studied at Marburg and at Vienna. He then went into practice in South Lincolnshire where he remained until his death 48 years later. In 1895 he took the D.P.H. Camb. and was appointed M.O.H. to the Bourne R.D., following on an inquiry into the sanitary conditions in those parts of Kesteven. Thanks largely to his persistent and patient endeavours the area was transformed from the worst to the best in the county. An isolation hospital was provided and new schemes for housing and water supply devised, so that when following the war, a progressive drive was made the ground was well prepared. Throughout Galletly by a fine example showed what the work of a part-time medical officer can produce when an independent spirit is backed by an intimate knowledge of the conditions and the people in his area.

We have received the following personal tribute: "A well grounded scholar in the humanities, Dr Galletly was fond of reading and of travelling. He was of the old school of general practitioner, hard working and finding his hobby in his work. He gave his best to his patients, never sparing himself and being always ready to take up the cudgels on their behalf when officialdom pressed. Impatient of humbug or conceit, he was loyalty itself to his fellow colleagues. He excelled in midwifery and had the art and knowledge and massive experience of a lifetime behind him, to help and guide and teach those that followed him. He was of a retiring disposition, but his integrity, kindness, and generosity made him the friend of all who came to seek help at his hands."

LUKE GERALD DILLON, O B E, M D R U I, M Ch

Dr Luke Dillon, who died on April 27th, was a son of Charles Blake Dillon of Springlawn, Co. Ros common. He received his medical education at Queen's University, Dublin, where he graduated as M.D. R.U.I. and M.Ch. in 1882. His career was spent largely in Seaham where he was at one time medical officer of health to the U.D.C. He was also surgeon to the Seaham Harbour Infirmary, Admiralty surgeon, and at one time surgeon to the Londonderry Collieries. He served during the war as a major, R.A.M.C. (T), and received the O.B.E. He was a man of wide interests, a F.S.A., and a J.P. for the county of Durham. He married Elizabeth Mary daughter of the Hon. Hubert Dormer, by whom he had one son. Dr Dillon had an interesting pedigree, being descended from Theobald Viscount Dillon, who was born in the Tower of London in

1591 and who in 1642 took the Oath of Association with the Irish Confederation. Dr Dillon had retired from the profession for some time before his death which occurred at Oxford.

HERBERT VICTOR HORSFALL M.B. Ch.B. Leeds

His death took place on April 18th of Dr Herbert Horsfall at the early age of 42. He was the son of the late Mr A. W. Horsfall of Halifax and received his medical training at Leeds University. He graduated as M.B. Ch.B. Leeds in 1917 and acted as house surgeon and resident surgical officer to the Leeds General Infirmary. During the war he served as medical officer to a combatant unit in East Africa holding the rank of captain. Thereafter he was in practice for a time at Cleckheaton after which he went into partnership in Otley. While at Otley he was actively associated with the Otley St. John Ambulance Association. He became medical officer to the New Hall Infirmary and held a high place socially in the Otley district. His death was unexpected as he was in the prime of middle life, but he had been in failing health for some time.

HENRY PRESCOT FAIRLIE, M.D. Glasgow

The death occurred at the end of March of Dr H. P. Fairlie the well known Glasgow anaesthetist. He was president of the section of anaesthetics of the Royal Society of Medicine 1933-34 and was a valued member of the council of the Association of Anaesthetists as well as of the editorial board of the *British Journal of Anaesthesia*. These offices had brought him into contact with many anaesthetists in London and the result had always been to establish in them warm feelings of friendship.

A contemporary writes: Fairlie a professional

excellence was accompanied by an unusual degree of modesty and charm. His text book written in elaboration of Ross's work was widely read and esteemed. He may well be regarded as one of the pioneers of modern anaesthetics in Glasgow. His example and his teaching did much to break down a traditional adherence to the routine use of chloroform and Fairlie fearlessly exposed the ill results which this practice had inflicted in the city where he practised. He contributed freely to the periodical literature of his subject and his writing was always free from padding and of practical value. His death is a severe loss to anaesthetics in general and leaves many English friends and colleagues the poorer.

JOHN LUKE JACKSON M.B. B.Ch. Belfast

The death occurred on April 5th of Dr J. L. Jackson medical superintendent of the Knowle Mental Hospital, Fareham. He received his medical training at the Queen's University Belfast and graduated with honours as M.B. B.Ch. Belfast in 1910. He showed early his interest in psychological medicine, and shortly after qualification was appointed as assistant medical officer to the Knowle Mental Hospital. At the outbreak of war he joined the R.A.M.C. and had an eventful military career seeing service in France and Gallipoli and receiving the Croix de Guerre. He had the unpleasant experience of being for a time a prisoner of war. On the cessation of hostilities he returned to his appointment at the Knowle Mental Hospital, and became medical superintendent in 1922. He was principal medical adviser to the Hants Joint Mental Health Institutions Committee and earned the reputation from all with whom he came into contact of being an energetic and sound administrator.

PARLIAMENTARY INTELLIGENCE

MILK PASTEURISATION

THE POOLE EXPERIMENT

In the House of Lords on April 22nd on the motion of Lord MAHER the Poole Corporation Bill was read a second time.

An Opponent of the Bill

Lord CRANWORTH moved that if he an instruction to the committee to which the Bill might be referred to strike out Clause 21 (by laws as to pasteurisation of milk). He said that this Bill raised a matter of grave national importance and he had always understood that a matter of general principle should never be brought forward in a private Bill. Such powers as were asked for in this Bill had never before been given or asked for in England. If Parliament granted such powers in this case it would seem logically impossible to refuse them in any other. The real reason for bringing Clause 21 into this huge Bill of 52 clauses was an outbreak of typhoid inournemouth 1901 and Christchurch. It was therefore admittedly panic legislation and for that reason somewhat to be deprecated. He had been at some pains to find out which milk really was responsible for that outbreak. The Poole corporation said it was but his local informants had told him that in his opinion it was not. The Dorset County Council were opposed to the Bill.

The main effects of pasteurisation were four: (1) It killed most of the obnoxious germs in milk. (2) It enabled dirty milk to keep for three or four days whereas otherwise it turned sour after about twelve hours—which was in itself rather a safeguard to the public. (3) It put out of action all small

producer-retailers because they had not the money to provide the necessary plant to do their own pasteurising. (4) Most important of all (he thought) it devastated the milk and destroyed some of its component parts. It remained a very good beverage, but it did not remain milk, and not such a good substance as milk, and that was the reason why another large section of the medical profession and a very much larger section of milk drinkers preferred raw milk.

If properly treated pasteurised milk was quite safe immediately after it had been pasteurised. But it was not always properly treated. Further pasteurised milk was subject to recontamination not only as quickly as raw milk but even more quickly. Generally speaking the reason for pasteurisation was said to be the prevention of tuberculosis. But many more people suffered and died from tuberculosis through not drinking milk at all than those who suffered from drinking bad milk. In the country districts where pasteurised milk was unavailable not only was there less tuberculosis but tuberculosis had gone down in a greater degree than in the towns.

The Diseases of Animals Committee said that if vitamin C was destroyed it could be returned by giving the children lime juice or orange juice. But their lordships think that in the poorer parts of our great cities the children were going to get orange juice or lime juice whenever they got a glass of milk. The loss in vitamin C through pasteurisation was first in vitamin C the loss of which causes scurvy, and secondly in vitamin D a loss which caused rickets. The chief medical officer of Dr Barnardo's Homes Dr A. H. Macdonald had made an exhaustive

study of this subject and had come to the following conclusions—

"(a) The child on raw milk is very fit (b) Chilblains are practically eliminated (c) The teeth are less likely to decay (d) The resistance to tuberculosis and other infections is raised (e) In one of his homes containing 760 delicate boys who were fed on raw milk for five years, only one case of non-pulmonary tuberculosis occurred, while in the preceding five years with similar types of children fed on pasteurised milk fourteen cases of non-pulmonary tuberculosis occurred"

There might be a case, said Lord Cranworth, for prohibiting the sale of unclean milk unless it had been pasteurised, but there was an equally good case, where clean milk was available, why it should not be pasteurised at all. The farmer had been asked to clean up his milk. He had been forced to spend large sums of money. He had been induced to have a new system, a higher grade of milk, and under the Accredited Scheme no fewer than 20,000 herds already participated. Were they going to take the retrograde step of saying that all this expenditure had been unnecessary, and say in effect "Produce as dirty milk as you like so long as you put it in the pasteurisation plant, when it will be just as good as the other"? Pasteurised milk could now be obtained wherever it was asked for. In Poole 80 per cent. got it. He could not see why people who disapproved of pasteurisation should be forced to do something which they believed to be to the harm of their children.

A very grave step was proposed in this clause. Surely if it was right, the Government should set up a committee—not a committee of producers or distributors, nor yet of doctors, but a committee of good common-sense people accustomed to weigh evidence—and ask them to present a report. Then let the Government, after consideration, produce the necessary legislation.

Case for Local Legislation

Lord MARKS said that anyone who had lived, as he had done, through the recent typhoid epidemic, when 900 people were affected and 51 died, would not imagine that the Poole corporation were doing anything panicky but were simply doing their duty in trying to ensure that such an epidemic should not occur again. Milk might be clean but not safe, and what the Poole corporation was seeking to do was to make the milk not only clean but safe. It had been suggested that they should put this off until the Government brought in a measure to deal with the whole community. If that were done, the Government would find themselves up against difficulties that they were not up against in this Bill. What might be done easily for a municipality with 500,000 people would be a very difficult and doubtful thing to do for a village with 200 or less. Their lordships had already given a Second Reading to the Glasgow Corporation Bill which contained a similar clause. There was no petition to the House against it, and no memorials against it, but 44 municipalities in England and Scotland had sent to the Ministry of Health memorials and petitions in favour of Clause 21 of this Bill, which it was now said should be deleted.

A Government Bill Promised

Viscount HALIFAX, Lord Privy Seal, speaking for the Government, said that the report of the Economic Advisory Council's Committee on Cattle Diseases, presided over by Sir Gowland Hopkins, made certain recommendations which did not correspond with the proposals in the Bill promoted on behalf of Poole. He understood that if this Bill received a second reading in its present form it would be referred to a Select Committee of the House so that the proposals as to pasteurisation might be specially examined. In the Government's view such an inquiry would be unsatisfactory and probably inconclusive. Such an inquiry ought not to be held in connexion with any

particular locality, for the question was general, affecting the country as a whole. The Government's intention therefore was to bring forward long-term legislation dealing with general milk policy in the near future. In that connexion the question of pasteurisation would be examined in the light of all the evidence available. When the proposals were brought forward Parliament would have opportunities for examining them in a form more satisfactory than was open to it at the present time. There was no reason for supposing that in the absence of compulsory pasteurisation the people of Poole would be in any different position as regarded the possibility of infected milk from that of persons in any other part of the country. Therefore, pending general legislation, there seemed to be no necessity to make special provisions in the case of Poole in order to prevent a recurrence of the outbreak the town had experienced.

The Earl of ONSLOW (chairman of committees) said he did not think it would be fitting to hold a long inquiry by a Select Committee into the question of pasteurisation, which had already had so many committees sitting on it. In the absence of any special necessity in Poole, the matter might safely be left to be dealt with by Public Bill.

Lord Dawson's Speech

Viscount DAWSON OF PENN said that the Poole experiment would have been very valuable. No indication had been given as to how long it would be before a general measure came before them. This matter had been under consideration for the whole of the century, and the position was really grave. Lord Cranworth was confusing clean and infected milk. Milk might be perfectly clean and yet be infected. On the other hand it might be uninfected and yet not be clean. He entirely agreed with Lord Cranworth that if pasteurisation was not to be efficient it would be better not to have it at all. But here was no question of using pasteurisation except effectively, and there was an overwhelming body of evidence that if it was carried out effectively pasteurisation prevented the conveyance of certain infectious diseases.

The mortality from tuberculosis had steadily declined, but there was one blot on the picture—namely, that there had not been the same improvement in the bovine type of infection as in the human type. In 1931 in this country there were 6000 fresh cases of milk tubercle, with 2600 deaths—a perfectly needless death-rate. It had to be remembered that milk tubercle attacked not only the weaklings, but also the strongest children, therefore they were wasting 2000 children that need not be sacrificed. In Scotland, for the same year, there were 1000 children affected and 465 deaths. By not dealing with this matter they were continuing this death-rate. There was a satisfactory movement for extending the supply of milk to children. But this made it doubly important to see that the milk-supply was clean and free from infection. He entirely agreed that it must be made clean. It would be the duty of the medical officer of health of Poole to see that it was clean. But the worst of this tubercle was that tuberculosis in cattle might occur in apparently healthy cows. The Department of Health in Scotland took the churns which went into one city and found that 10 per cent. of the samples contained not dead but living tubercle bacilli, so that every time a child drank a glass of milk—a child at its most susceptible age—it was likely to be imbibing tubercle bacilli. In Glasgow, over 13 per cent. of the samples contained living bacilli, and therefore each glass of milk was an active source of infection to the children. Mention had already been made of the Bournemouth outbreak, and the deplorable number of deaths which occurred. There were others. It might almost be asked, in the words spoken of Pharaoh "How much persuasion does he require to let the people go?" In Brighton and Hove there was an outbreak in

1020 of septic sore-throat due to milk infection subsequently to its being withdrawn from the cow. A thousand families were affected, and there were 65 deaths. Then there was the Epping epidemic of paratyphoid in 1931 with 260 cases and there was the famous Chelmsford epidemic of scarlet fever and sore-throat, in 1935 with its 1000 cases, and then followed this Bournemouth outbreak. Therefore it must be realised that milk might be perfectly clean and still be infected owing to handling subsequently to being milked from the cow. He was bringing this matter forward really to stress the urgency of this problem—that if it was not desirable to allow Poole to work this out on a small scale and prove it, yet it was an urgent matter which should be brought to an issue.

If they could secure that milk should be controlled and that herds should be perfectly healthy, that would be the ideal way of dealing with this question, but it was impracticable except in a few selected spots. The expense of making good all the tuberculous cows in this country was one that no reasonable Government could face. For these reasons therefore protected herds could only be few in number and could be maintained only where conditions were very favourable. In Denmark they did allow raw milk to go to children, but for the rest of the population they insisted on milk being pasteurised. But the raw milk that went to the children—less than 20 per cent. of the total—had to go to specially controlled dairies. A further reason for pasteurisation was that even when milk was free from tubercle bacilli it was still liable to get infected by handling. The Bournemouth Epping and Chelmsford epidemics were all due to infection reaching the milk after it was taken from the cow. That was why he saw no alternative to a properly organised system for pasteurising milk. He sympathised with the one-sixth of the milk producer-salesmen in the country who would suffer. It would be a change for them to have to pasteurise the milk, but they could imitate Denmark and go in for co-operation. Or if necessary they should be compensated. The price would be a very small one to pay. He could not see what good it was to spend vast sums on health services and leave this bad sore open year after year.

In conclusion Lord Dawson said he very much regretted that this experiment could not be made in Glasgow and in Poole so that when the Government came to consider their more general legislation (and they had no information as to when that would be) they would have gained some experience.

The Debate Concludes

Lord STRABOLOT said that the Medical Committee which advised the London County Council were very anxious that the powers in Clause 21 should be given to the Poole corporation. When were they to expect this legislation of the Government? He understood that the time-table was already overcrowded. They had had a great deal of talk recently about malnutrition and the health of the population; they had a special committee to consider how to improve the physical fitness of the people; and here was an attempt to stop at its source a cause of sickness and death. Yet Lord Halifax said they must wait until the whole matter had been examined once more and a general Bill was introduced for the whole country.

Lord CROMWELL wished to correct any impression that the House generally accepted the principle that pasteurisation must come sometime and that the only issue at this stage was whether it should be introduced through a local authority or by the Government. He regarded the pasteurisation of milk as a very doubtful cure at its very best.

Lord MARRAS said that if the Bill were taken as an opposed Bill it would entail considerable expense. The Poole corporation would be satisfied for it to pass with the instruction to the committee that Clause 21 should be deleted.

The motion to delete Clause 21 was agreed to.

MATERNITY SERVICES IN SCOTLAND

In the House of Lords on April 27th Lord STRABOLOT and MOUNT ROYAL moved the second reading of the Maternity Services (Scotland) Bill. It covered he said a wider field than the English Midwives Act of last year. Scottish medical men took a much larger part in midwifery practice than their English confrères and the Bill was therefore not limited to a midwife service only. It proposed that any woman who desired to be confined in her own home would be entitled to the services of a midwife and a doctor. If the need arose the doctor could call for the advice or help of an obstetrician of recognised standing. A thorough system of antenatal and postnatal care would be a fundamental feature of the scheme. Local authorities would be free to select the type of arrangements they preferred so long as the services were adequate. In some areas medical arrangements—other than those relating to obstetricians—might be made with all general practitioners in the area who were willing to take service on the terms offered. In other areas the antenatal and postnatal examinations might be carried out at the authority's clinics, and arrangements made either with all practitioners or with a limited number of them to provide the intranatal service. No insuperable difficulty was anticipated in securing the services of qualified obstetricians in most areas, but adjoining areas might sometimes find it desirable to combine for the purpose. The local authorities were required to consult with any local organisation representing the medical practitioners in the area before submitting their proposals for the Department's approval. The remuneration of midwives and doctors participating in the service would be a matter for negotiation between them and the local authorities. One of the beneficial aspects of the scheme would be the elimination of bad debts which had been a source of much worry particularly to midwives.

Clause 6 the object of which was to prevent the attendance of unqualified persons on women in childbirth contained a proviso exempting from the prohibition medical students and pupil midwives attending as part of their course of training. It has been expressed about this permission but the department was assured that the arrangements for training in every Scottish university were such as to ensure the safety of the patients. It was clear that neither medical students nor pupil midwives were sent out to the homes of the people until they had been properly tested in the maternity ward and had satisfied their teachers that they could be trusted with outside cases.

Lord STRABOLOT welcomed the Bill which he said was a very long step towards a State medical service. It was a very much larger step than was contemplated for England and he congratulated the Scottish Office upon its courage in introducing the Bill.

The Bill was read a second time.

NOTES ON CURRENT TOPICS

In the House of Lords on May 14th the Hydrocyanide (Fumigation) Bill on the motion of the Marquess of DUFFERIN and ARA was read the third time and passed. On the same day the Maternity Services (Scotland) Bill passed through committee without amendment.

In the House of Commons on May 14th Sir ERIC LEE, M.P., Minister of Health introduced the Local Government Superannuation Bill in order to make further and better provision with respect to the payment of superannuation allowances and gratuities by local authorities and certain statutory undertakers, and with respect to the persons entitled to participate in the benefits of a local authority's superannuation fund or scheme. The Bill was read a first time.

QUESTION TIME

WEDNESDAY, APRIL 28TH

Mouthpieces of Public Telephones

Colonel GOODMAN asked the Postmaster General what action was taken to cleanse the mouthpieces of the instruments in public telephone boxes, and at what intervals—Sir W. WOMERSLEY, Assistant Postmaster General, replied: The mouthpieces and earpieces of telephones in call offices provided with an attendant are wiped with a clean cloth moistened with suitable disinfectant every morning. At other call offices the frequency depends on the location of the kiosk and the extent to which it is used.

Colonel GOODMAN: If no official is handy are these call offices' mouthpieces ever disinfected?

Sir W. WOMERSLEY: A full investigation has been made into this question by a committee upon which medical men sat and their decision was that the infection was more psychological than actual. (Laughter.)

Mr. THORNE: Can the hon. Member give any guarantee that everybody's mouth is clean before using the telephone?

Sir W. WOMERSLEY: I will leave that to my hon. friend.

THURSDAY, APRIL 29TH

The Birching of Juvenile Offenders

Mr. SHORT asked the Home Secretary if he was aware that a further six boys were ordered to be birched by the West Riding juvenile court, Doncaster, on April 21st, whether the sentences had been carried out, and whether he would now reconsider his decision not to advise magistrates not to impose such sentences having regard to the appointment of the committee of inquiry—Sir JOHN SIMON replied: Yes, Sir. Six boys were ordered on April 21st to be birched, five have been birched and the police surgeon found that the sixth was unfit for the punishment. I cannot do more than say that I am sure that justices will realise that I regard the whole subject as one which needs investigation.

Mr. T. WILLIAMS: Is the right hon. gentleman aware that the boy who was not fit to be birched on the day when the other five were birched has been invited to attend the police court on Tuesday next to be birched? Does the right hon. gentleman regard it as consistent with the law for a boy to be sent home and be called upon to return a week later to receive his birching?

Sir J. SIMON: I do not know the circumstances to which the hon. Member refers but will make inquiries.

Mr. SHORT: Would the right hon. gentleman send a circular to clerks of the peace calling their attention to the fact that he has set up this committee of inquiry?

Sir J. SIMON: I could not do that, the fact is perfectly well known, and I think that when an inquiry has been set up it is very essential that the authorities should not seem to pronounce judgment before the inquiry is completed.

Training of Blind Children

Sir WILLIAM JENKINS asked the President of the Board of Education if he had any record of the number of blind boys and girls who, on leaving school, were being trained for some trade or any other occupation, and the number of these wholly employed for the years 1935 and 1936 in England and Wales, separately—Mr. OLIVER STANLEY replied: It is estimated that at present the number of blind boys and girls as distinct from the partially sighted who leave the schools for the blind each year at the age of 16 is about 200. The Board do not have a statistical record but it is known that practically all of these who are likely to be employable enter vocational courses of training. On March 31st, 1936, the total number of boys and girls from schools for the blind who were being trained was 993. The Board have no statistics concerning the employment of the blind, which is a matter for my right hon. friend the Minister of Health.

Sir WILLIAM JENKINS asked the President of the Board of Education what was the number recorded of borderline cases of pupils in schools for the blind, and was the test for certification of blindness causing a hardship on certain types of children who were educationally blind, but on reaching a certain age were marked sighted for

industrial purposes—Mr. OLIVER STANLEY replied: The Board have no statistical record of the number of such cases, but I agree with the conclusion of the Committee on Partially Sighted Children that such children should be taught in schools or classes for partially sighted children and that hardship is involved if they are educated and brought up as blind and have later to enter the sighted world, for which their education has not fitted them.

Hospital Arrangements in Staffordshire

Mr. MANDER asked the Minister of Health the present position with regard to the protests against the arrangements made by the Staffordshire County Council in Wednesfield, Willenhall, and other districts for the treatment of invalids and old people, and whether he would endeavour to arrange that negotiations should be reopened between the Staffordshire County Council and the Wolverhampton Borough Council, with a view to arrangements being made for Wednesfield and Willenhall residents to have the same facilities for obtaining treatment at the New Cross institution as were possible prior to April 1st, 1937—Sir KINGSLEY WOOD replied: I would refer the hon. Member to the answer which I gave to his question about these arrangements on April 8th. I am in communication with the county council regarding the representations which I have since received on this subject and will inform him further of the position when I have received their reply.

Mr. MANDER: Will the right hon. gentleman bear in mind that there is still plenty of room in the New Cross institution where invalids can go in a few minutes instead of having to travel 14 miles to Wordsley?

Sir K. WOOD: Yes, Sir.

Old Age Pensioners in Poor-law and Mental Hospitals

Mr. LEACH asked the Secretary to the Treasury if he had considered the copy sent to him of a resolution of the Eastbourne pensions committee, and supported by other committees, asking for a reform of the old age pensions law so as to provide a fairer method of calculating the means of persons who had been inmates of poor-law institutions or mental hospitals, and if he was prepared to comply with the wishes so expressed—Lieut. Colonel COLVILLE replied: The resolution to which the hon. Member refers is presumably that which asked that the cost of maintenance should be excluded in calculating the means of a pensioner who is in a poor-law institution for medical or surgical treatment and that the disqualification in certain circumstances from receipt of pension of a person in a mental hospital should be removed and the cost of his maintenance there disregarded in calculating his pension. This would have the effect of giving the pensioner free maintenance as well as a pension calculated on the basis that he is maintaining himself, and in so far as the pension is appropriated by the local authority, it would operate merely as a grant in aid of local expenditure. I am afraid, therefore, that the Government are not prepared to introduce the legislation which would be necessary to effect these changes.

Mr. LEACH: Is it not reasonably argued that old age pensioners who need medical or mental treatment of that sort are in such poor conditions and circumstances that they should have this concession made by the Government?

Lieut. Colonel COLVILLE: I have given the hon. Member a long and careful answer and I am afraid I cannot add to it.

MONDAY, MAY 3RD

Health Insurance and Maternity Benefit

Mr. DE ROTHSCHILD asked the Minister of Health whether he would introduce legislation to amend the National Health Insurance Acts so as to increase the amount of maternity benefit payable by approved societies seeing that the Midwives Act 1936, by making compulsory the attendance of a qualified midwife at all confinements, threw an added financial burden on insured contributors at such times—Mr. HUDSON, Parliamentary Secretary to the Ministry of Health, replied: The position of a woman entitled to maternity benefit as regards the arrangements for attendance at her confinement is not materially affected by the provisions of the Midwives

Act 1936 The National Health Insurance Acts have always contemplated that such a woman should be attended either by a medical practitioner or a qualified midwife. Moreover the Midwives Act expressly provides that the fees charged by local authorities for the services of their midwives may be remitted in whole or in part where the circumstances justify such remission. My right hon friend does not therefore, consider that the coming into operation of the new Midwives Act affords any reason for the suggested amendment of the National Health Insurance Act.

TUESDAY MAY 4TH

Prevention of Silicosis

Mr JAMES GRIFFITHS asked the Secretary for Mines the precise nature of the preventive measures that had so substantially reduced the incidence of silicosis in the Rand mines whether these preventive measures were made obligatory upon the Rand mine-owners by statute or regulations; in how many collieries in Great Britain and South Wales respectively these preventive measures were in use; and whether he proposed to issue the regulations to make their adoption obligatory upon the mines of this country.—Capt CROOKSHANK replied: In South Africa those mines which are scheduled under the Miners' Phthisis Benefits Law are subject to regulations requiring special preventive measures to be taken. I cannot within the limits of an answer state those preventive measures precisely but the general purport is to provide for initial and periodical medical examination of persons exposed to the risk and for the suppression of harmful dust which might be breathed by such workers. I have not sufficient statistical information to enable me to answer the third part of the question. As regards the fourth part the South African regulations apply only to the scheduled mines which generally I understand, are the metalliferous and not the coal mines; and as at present advised I do not propose as regards the coal mines of this country to displace the method of differentiating requirements according to risk in favour of applying the same requirements to all these mines. The whole matter is however under consideration by the Royal Commission now sitting.

Maternal Mortality

Mr GEORGE GRIFFITHS asked the Minister of Health the number of deaths in childbirth for 1936 and the number of deaths arising out of childbirth for 1936.—Mr HUDSON Parliamentary Secretary to the Ministry of Health replied: For 1936 the deaths classified to pregnancy and childbirth were 2302 while the deaths not classified to these causes but returned as associated therewith were 677. These figures relate to England and Wales, and are provisional.

Typhoid Fever in Liverpool

Mr GROVES asked the Minister of Health how many cases of typhoid fever had been notified at Liverpool this year and whether this outbreak was now at an end.—Sir KINGSLEY WOOD replied: 123 cases of typhoid fever (including paratyphoid) have been notified in Liverpool during the present year up to April 24th the majority of which occurred in an outbreak of paratyphoid fever in January. I am informed that that outbreak is regarded by the local authority as being now at an end.

Employment of Boys in Coal Mines

Mr TENNER asked the Secretary for Mines how many boys there were under 16 years of age working underground in coal mines that come under his department.—Capt CROOKSHANK replied: At Dec 12th 1936 the latest date for which the information is available 17,044 boys under 16 years of age were employed below ground in coal mines in Great Britain.

Experiments on Living Animals

Mr LEACH asked the Home Secretary how many inoculations had been performed in contravention of the Cruelty to Animals Act 1876 by the experimenter referred to in the Home Office Return of Experiments on Living Animals for 1935 and what period of time had been covered by the illegal inoculations.—Mr GEORGE WOOD Under-Secretary Home Office replied: 14 and all were given on the same day.

THE LANCET 100 YEARS AGO

May 13th 1837 p 264

FROM THE EVIDENCE RELATING TO THE MEDICAL RELIEF OF THE SICK POOR IN THE PAROCHIAL UNIONS given before the SELECT COMMITTEE OF THE HOUSE OF COMMONS in 1837 Tenth Day Wednesday April 14 Mr Fazakerley in the Chair

MR. THOMAS BOURNE.

4324 Examined by the Chairman] You are master of the Farham workhouse?—Yes

4328 In what state were the boys Cooke, Warren, and Withers, when they were sent to you?—They appeared healthy

4330 Who is the medical man of that house?—Mr John Blatherwick

4332 Had those children dirty habits?—They commenced their dirty habits the first or second night after their admission

4334 What observation did the medical man make upon hearing of that?—None in particular

4336 What did you do to correct those habits?—With held part of the food

4342 Were the visiting guardians made acquainted with the food being diminished?—Yes they did not object to it Half of the food for the day was stopped

4348 Was any punishment also had recourse to?—The children were placed in the stocks frequently both standing and sitting and were kept in them from meal to meal at the same time that their food was diminished I believe. When the schoolmistress intimated to me that it did not appear to have any effect upon their filthy habits, I desired her to discontinue withholding their food or any other punishment

4350 How soon after they were in the house did the schoolmistress observe to you that their health appeared to decline?—I suppose a month

4630 Will you read the dietary of the workhouse for young children?—On the Sunday children under nine years of age have three ounces of bread for breakfast and one pint of gruel with milk. The dinner is one pint of meat soup half a pound of potatoes and three ounces of bread; supper four ounces of bread, one ounce of cheese or half an ounce of butter. Monday for breakfast five ounces of bread one pint of gruel with milk. Dinner eight ounces of meat pudding; supper five ounces of bread one ounce of cheese or half an ounce of butter

4641 On Monday were these children almost always deprived of half that sustenance?—The Monday was the same as any other day; they were not punished more than twice or three times a week. (The dietary of the other days in the week was detailed by the witness)

4643 By Mr. MILLER] Are the Committee to understand that with this dietary those dirty children were punished frequently three times a week by half that allowance being stopped?—Yes

4645 Give the number of ounces of food for the whole week?—2380; nine ounces of which is meat; potatoes 32 ounces; cheese 7 ounces; pudding 8 ounces; three pints of soup; and a pint of gruel every morning

4689 By Mr. MILLER] You received back one half of the allotted food of the diminished meals of children?—Yes

4691 What is done with it?—It is put up for the next meal

4696 Is it at the discretion of the mistress to withhold food as a punishment?—Yes and also to put children in the stocks

4717 You have stated that the children were taken to an out-house; is it a room or a stable or a wash-house?—It is a plastered room on the other side of the yard originally intended for a workshop with a stone floor

4720 Is there any fire place in it?—No

4722 At what period of the year were the children confined in that room?—In January

* * Oliver Twist was first published in 1837 in Bentley's Miscellany —T. D. L.

ROYAL SOCIETY CONVERSAZIONE

AMONG the exhibits at the Royal Society's conversation on May 4th was one by Prof H H Woollard, who showed radiograms of lymphatics made opaque by injection of thorotrast and barium. They demonstrated the longitudinal pattern of the vessels in the extremities and the circular arrangement around the trunk. The lymphatics above were seen to converge on the axilla and those below on the groin, the dividing line being about the middle of the trunk. The injection of lymphatics near a carcinoma showed that normal lymphatics traverse the mass, that many lymphatics about the carcinoma remain patent and contain no carcinomatous cells. Normal lymphatics pass from the growth to lymph glands found to contain metastases, it was concluded that carcinomatous cells occasionally rupture into a lymphatic vessel and are carried as emboli to the gland. Injections of thorotrast into the living had been used to investigate lymphatic oedema and obstruction, and also the lymphatic flow in skin transplantation and pedicle grafting. This part of the work had been done in co-operation with Sir Harold Gillies. Recently another opaque material which contained no thorium had been devised for injection.

Mr F C Bawden and Mr N W Pine of the Rothamsted Experimental Station and the department of biochemistry, University of Cambridge, showed some of the peculiar physical properties of nucleoproteins obtained from virus infected plants. These proteins are believed to have the largest molecules yet known, the molecular weight being of the order of 17,000,000. They are obtainable only from infected plants and are capable of transmitting the disease even in extremely high dilutions (1 in 10^{10}). They are prepared from the plant by solution and precipitation, the precipitate is dissolved again and the final material bears a quantitative relation to its infectivity. It is specific in its relation to the plant and, when injected in great dilution into rabbits, can produce antigens. Another exhibit, by Mr J D Bernal and Dr I Fankuchen, was of the X ray pictures of this protein in various states. The molecules had been shown to be rod shaped with a cross section diameter of 15μ but with lengths probably greater than 100μ .

During recent years several substances having growth promoting properties have been isolated from plants. Three, called auxin a, auxin b, and hetero auxin, are now recognised, the last being β indolyl acetic acid, a substance which has been synthesised. It is only known to promote growth in plants. It was the object of an exhibit by Imperial Chemical Industries Ltd. When painted on one side of seedlings grown in the dark it caused them to grow crookedly from overgrowth of that side, when applied to tomato plant stalks it had induced root formation quite high on the plant, when put on cuttings it was found to assist the vigorous formation of rootlets.

Lieut Colonel A J Peile showed the dart-like radula of a mollusc which lives in the Indian Ocean, the animal uses them for injecting a poisonous substance into its prey but occasionally, it is said, the poison has caused paralysis and even death in man.

Other exhibits were of models of protein molecules, including ones for pepsin and insulin (Mrs Dorothy Winch, D.Sc.) and modifications of dominance in mice (Prof R A Fisher and Mr K Mather, Ph.D.), while for the delight of the curious there were bells which sounded when touched with solid carbon

dioxide, human teeth fluorescing in ultra violet light, and earphones with which to listen to beetles in timber.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdrs A de B Joyce and W G C FitzPatrick to President for Medical Department

Surg Comdr (D) S E Brown to Resource

Surg Lt Comdr (D) E R Longhurst and Surg Lt (D) W R Knott to Caledonia

The following have been appointed Admiralty Surgeons and Agents —

Mr B E Hawkins (Anerley road, S.E. 20) for London District No 8 (Catford, Dulwich, &c.), Mr F A Anderson (Stranraer) for Stranraer, Mr F E Higgins (Sudbury, Suffolk) for Sudbury, Mr J Cullen (Northampton) for Northampton, and Mr A C Ainsley (West Hartlepool) for West Hartlepool.

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt Comdr (D) G P Monk placed on the Retd. List

L F Donnan entered as Proby Surg Lt

ROYAL ARMY MEDICAL CORPS

Short Service Commissions — Lts to be Cpts J A MacDougall, J C A Marchand, and D Wright

Lt (on prob) A F H Keatinge is confirmed in rank.

ARMY DENTAL CORPS

Short Service Commission E Smith, BDS, to be Lt (on prob)

TERRITORIAL ARMY

Capt W H G Park to be Maj

Capt F Lawrence resigns his commission

Lt A Bennett, from 7th Bn Cheshire R., to be Capt
To be Lts H R J Donald (late Cadet Corp., Winchester Coll Contgt, Jun Div, OTC), Edw Fulford (late Offr Cadet, Univ of Lond Contgt (Med. Unit), Sen Div, OTC), R J McGill (New Zealand Forces, Res of Off), W B Evans, H B Collins, and K G Sugden

ROYAL AIR FORCE

Group Capt T Montgomery to Headquarters, R.A.F. India, New Delhi, for duty as Principal Medical Officer

Flight Lts S B S Smith to Central Medical Establishment, London, R C H Tripp to No 1 School of Technical Training (Apprentices), Halton, C A Rumball to R.A.F. Institute of Pathology and Tropical Medicine, Halton and J S Wilson to No 8 (Bomber) Squadron, Aden.

Flying Offrs D F Cameron to Home Aircraft Depot, Henlow, W T Buckle to No 5 Flying Training School, Sealand, J D Milne to No 9 Flying Training School, Thornaby, J C Taylor to No 10 Flying Training School, Tern Hill, H O B Howat to No 11 Flying Training School, Wittering, and C E G Wickham to R.A.F. Station, Narham

AUXILIARY AIR FORCE RESERVE OF OFFICERS

Flying Offr T E Canthorne relinquishes his commission on completion of service

INDIAN MEDICAL SERVICE

The War Office announces that with the approval of the Government of India Major Gen G G Tabuteau, D.S.O., late R.A.M.C., Deputy Director of Medical Services, Northern Command, York, has been selected to succeed Major Gen E A Walker, C.B., M.B., F.R.C.S. Edin., K.H.S. I.M.S., as Director of Medical Services, India, with effect from August 10th, 1937, when the latter vacates the appointment. (Vide also *Lancet*, April 10th, p. 895.) Major Gen. Walker has been granted leave pending the vacation of his appointment.

Col W J Powell C.I.E., I.M.S., V.H.S. is appointed Hon Surg to the King, vice Major Gen A W M. Hare, I.M.S. retired

Lt Cols H B Scott, O.B.E., and A L Sheppard retire Indian Medical Department — Maj (Sen Asst Surg) A L Ellox retires

(Continued at foot of next page)

MEDICAL NEWS

University of Cambridge

On May 1st the following degrees were conferred —

M.B. & Chir. — G D Pirrie, A B Evans, P J Wenger,
 Byrne, A H Knowles, A Buxton, L A Collins, G C L,
 Pugh, H T H Wilson, F J Evans, L N G Lytton, A C
 Blandy, A A D La Touche, I W Macchichan, D S Scott,
 E. M. Moore, and S. L. H. Jones.

M.D. & Chir. — G C Milner, H O MacLaren, A Monk,
 Mason, Payne, Eric Gordon, J F Lown, W A Briggs,
 E H Morrell, H B Doddwell, M M Hyley, D A
 Smith, A B R Ginn, E O D Cragg, J N Mosley, D
 Gaston, G R Farnham, J J Burton, S C Gaster, A M
 Barry, A M Weston, C E R Wood, H B Meller, Edward
 Sharp, A F Bryson, Frank Clifton, P A Walford, J E A
 David, Rupert Solley, E H Drake, H S Gilmer, T B L
 Bryan, K E R Levick, R P H Harris, and R B Heath.

By proxy.

University of London

At a recent examination for the diploma in psychological medicine G. A. FitzPatrick passed with special knowledge of mental diseases. G. L. Ashford and Augusta G. Harrison passed in part A of the examination.

Royal College of Physicians of London

At a meeting of the college held on April 29th with Lord Dawson the president in the chair the following members were elected fellows:—

Arthur Cecil Alport M.D. Edin. (London), Thomas Peorse
 William M.D. Lond. (London), William Noel Goldsmith M.D.
 Camb. (London), Henry Fitzgerald Maudslayi M.D. Melb.
 (Melbourne), Lewis Ralph Tealand, M.D. Ontario (London),
 Francis Joseph Bentley M.D. Durh. (London), Francis Wilhem Brian
 Fletcher M.D. Edin. (New Zealand), Jeffery Ramsay M.D.
 Lond. (Blackburn), Frank Duth Horwitt M.D. Camb.
 (London), Oscar Brenner M.D. Birm. (Birmingham), Benjamin
 Winiford Morgan M.D. Glasg. (Glasgow), George Henry
 M.D. Lond. (London), Percy Selwyn Selwyn-Clarke
 M.D. Lond. (Nigeria), William Sydney Charles Copeman M.D.
 Camb. (London), Rodney Smith, M.D. Lond., Brevet Lieut.
 Colonel H.A.M. (C. Hong Kong), John Henry Charles Coad
 M.D. Camb. (London), M.D. Lond., M.D. Calcutta, Charles Coad
 Ungley M.D. Durh. (Newcastle-upon Tyne), Richard Desmond
 Curran, M.B. Camb. (London), Allan William Spence M.D.
 (London), Robert Stevenson Allen M.D. Lond. B.Z.
 (Edinburgh), Arnold Adams M.D. Camb. (London), Harry
 M.D. Lond. (London), M.B. Oxon (London), Thomas Ansell-Harvey
 M.D. Lond. (London), Dame (Anne) Louise McIlroy M.D.
 Glasg. (London), Edward Johnson Wayze, M.D. Lond.
 (Edinburgh), Henry Ambrose Trevellick M.D. Lond. (Edin-
 burgh), John (John) Pitt-Rivers, M.D. Lond. (London),
 M.D. Lond. (London), Reginald St. Leon Heathcote
 M.D. Oxon (Cardiff), Philip Graham-Hogg M.D. Birm. (London),
 John Frederick Wilkinson, M.D. Blanch. (Stockport), and
 under his law, and in the same manner, and in the same
 under his law, and in the same manner, and in the same
 MacArthur D.Sc. M.D. Belf. (Major-General R.A.M.C. (London))

The following were admitted members of the college —

Mohammed Attia Abboud, M D Cairo, Sitarum Damodar
Annescomaker, M D Bombay, John Bennet, Major R A M D
M D Edin, Roy Clarke M D Oxon, Ewan Lawrie Corlett
M B Sydney, Guy Isaac Cronden, M Sc Lond, L R O I
Emmanuel Andrew, M D London, John Duff, M D
M D Glasgow, William Alexander Elliott M D Camb; Ahmed
Mahmoud El Sakah M D Cairo; Noel Gordon Harris, M D Lond,
George William Hoern M D Lond, Charles Anthony Hinds
Howell M D Oxon, Louis Lucy Jeffery M D Lond, Manohar
Robert Rank R D C P; Hemeage Marchant Kelsey M D Lond
Frederick Harold Kemp, M B Ilm, Phyllis Margaret Kirkcaldie
Alicia, Ph D Lond, L R C, Elizabeth Lester, M D Lond,
Alfred John Lloyd M D Liverp, Murray McGee
M B N Z, Richard Alfred Mayes Fellow M D Adelaide
William Gwynne Reeves M D Oxon, John Samuel Richardson
M D Camb, Charles Ronald Smith M D Lond,
John Stuart M D Lond, Kenneth Squires M D Lond
Stephen James Lake Taylor M B Lond, Henry Rawle

(Continued from previous page)

DEATHS IN THE SERVICES

The death occurred on April 29th of Lt. Col. **FREDERICK JOSEPH GARLAND**, D.S.O. R.A.M.C (ret.) of Lydd. He was the son of the late James Garland of Rathmines Co. Dublin who was born in IR and was educated at the Royal University of Ireland and qualified M.B. in 1901. He joined the R.A.M.C. in January 1901 and became captain in July 1907. For a time he was at Ahmadnagar Military and then at Colchester. He served in the 1 greyhound War 1914-18 was mentioned in despatches and in 1918 was created D.S.O.

Vickers M B Sheff Denis John Williams M D Manch
and Reginald Alexander Wilson M D McGill

Licences to practise were conferred upon 212 candidates (193 men and 19 women) who have passed the final examination of the Conjoint Board and have complied with the by laws of the college. The following are the names and medical schools of the successful candidates —

[illegible]

F. Vernon, Manch. F. H. Volland, Birn. G. M. Ward, Lond. S. Ward and R. W. Watts, Camb. and St. Thomas's. G. V. Webster, Birn. T. Werner, St. George's. R. A. White, St. Bart's. E. H. L. Wigram, St. Thomas's. O. G. R. H. Williams, Oxon. and Westminster. S. I. Williams and A. D. Willis, Guy's. I. A. Winer, Middlesex. F. A. J. Woodland, Guy's. E. Wooll, Univ. Coll., and A. S. Woolstone and R. O. Yerbury, Guy's.

Diplomas in tropical medicine and hygiene were conferred (jointly with the Royal College of Surgeons) upon the following:—

H. Akhtar, S. Amarasinghe, R. H. Barrett, A. H. Booth, J. W. Bowden, J. C. Busby, K. L. Buxton, Dorothy G. Cowie, G. H. Fisk, A. B. Gilroy, S. A. Hasib, A. D. Hodges, W. H. Jeffrey, A. Mizrahi, P. P. Murphy, V. T. Pasupati, M. G. Pearson, C. Ponnambalam, J. D. Prasad, J. T. Robinson, M. Roushdy, C. A. Rumball, A. G. Rutler, S. Shrikhande, L. M. de Silva, M. Singh, D. W. Soman, A. S. Syed, A. L. F. Thomson, G. I. Watson, and J. G. Webb.

Lord Dawson was re-elected representative of the college on the governing body of the British Postgraduate Medical School and Dr Archibald Malloch the representative at the celebration of the fifteenth anniversary of the founding of the College of Physicians of Philadelphia on May 14th. Dr Edwin Bramwell will deliver the Croonian lectures on clinical reflections upon muscles, movements, and the motor path at the college at 5 p.m. on May 25th, 27th, and June 1st.

Society of Apothecaries of London

At recent examinations the following candidates were successful:—

Surgery—A. A. Beazeley, Guy's Hosp., N. Blackford, Univ. of Camb. and Middlesex Hosp., P. H. Denton, Guy's Hosp., S. M. M. Niall, Royal Colleges Edin., and W. G. Tillman, Guy's Hosp.

Medicine—P. H. Denton, Guy's Hosp., G. Howell, Welsh National School of Medicine, L. W. La Chard, St. George's Hosp., J. F. Mason, Univ. of Calcutta and London Hosp., A. P. Motley, Royal Colleges Edin., and F. L. Skinner, Univ. of McGill.

Forensic Medicine—P. H. Denton, Guy's Hosp., G. Howell, Welsh National School of Medicine, L. W. La Chard, St. George's Hosp., J. F. Mason, Univ. of Calcutta and London Hosp., A. P. Motley, Royal Colleges Edin., and F. L. Skinner, Univ. of McGill.

Midwifery—D. R. Daniel, Middlesex Hosp., J. B. Good, Guy's Hosp., J. F. Mason, Univ. of Calcutta and London Hosp., and F. D. Pitt Palmer, Middlesex Hosp.

The following candidates, having completed the final examination, are granted the diploma of the society entitling them to practise medicine, surgery, and midwifery:—

N. Blackford, S. M. M. Niall, P. H. Denton, F. L. Skinner, and L. W. La Chard.

Royal Faculty of Physicians and Surgeons of Glasgow

At a meeting of the faculty on May 3rd, with Prof. Archibald Young, the president, in the chair, the following were admitted to the fellowship: Joseph Alexander Bell (London), Hatimhai Shaikh Abduljally Malik (Bombay), and George Broughton Smart (India).

National Hospital, Queen square

The Lord Mayor, Sir George Broadbridge, took the chair on April 27th at a festival banquet given at the Mansion House in aid of this hospital. The guest of honour was the Duke of Kent, who made a moving speech describing the work of the hospital and its great needs. It was he said the oldest and largest hospital for nervous diseases in the world. The speed at which life was lived nowadays made a great toll upon everyone's reserves of nervous energy and caused many forms of illness. The hospital had a special claim on those interested in the industrial life of the country. Every step forward in science and mechanisation produced a new source of nervous strain for the workers. Leaders of industry, who had been generous in the past in providing money for research into the application of science to business, would not be deaf to an appeal on behalf of research into the causes and cure of nervous diseases due to the increase of scientific methods in industry. The Rockefeller Foundation would give £120,000 to the new research department if a like sum were raised in this country. The British people could not fail to take up that challenge. Sir Walter Monckton, K.C., supporting the toast, gave figures for the work of the hospital: 1500 in-patients with 300 operations a year. The hospital played he said, for a great part in the propagation of British methods, for 4200 British doctors from all over the world had studied

there in the last ten years. A film was then shown illustrating the activities of the hospital and the difficult conditions which the obsolete buildings imposed upon the workers. The amount realised by the appeal at the festival dinner came to about £25,000.

University of Manchester

The Rockefeller Foundation have made a grant of £5000 to be spread over four years, in support of the research work in biochemistry being carried out at the university under the direction of Prof. Heilbron.

Royal Medico-Psychological Association

The examination for the Gaskell gold medal and prize and the examination for the certificate in psychological medicine, will be held at the Maudsley Hospital, London, on May 26th and 27th. Further information will be found in our advertisement columns.

South-West London Medical Society

The meeting of this society which was to have been held on May 12th has been postponed until May 19th, when Dr Wilfrid Sheldon will read a paper on abdominal distension in children. The meeting will be held as usual at the Bohnsbroke Hospital at 9 p.m.

Gresham College

Four lectures on physics will be delivered at the College, Basinghall-street, London, E.C., by Dr J. Alison Glover on May 10th, 11th, 13th, and 14th at 6 p.m. He will speak on some aspects of the school medical service and the lectures will be open to all without fee.

West Kent Medico-Chirurgical Society

The annual dinner of this society will be held at Chiesmans Restaurant, High-street, Lewisham, S.E., on Thursday, May 20th, at 8 p.m. Dr H. V. Morlock will be in the chair. Tickets may be had from the hon. secretary, 267, Baring road, Grove Park, S.E. 12.

City of London Hospital for Diseases of the Heart

Queen Mary opened the new surgical wing of this hospital on April 29th. The accommodation includes ten single bed wards specially designed for serious chest operation cases. Patients in these wards will be selected irrespective of whether they are paying patients or not.

Palmer Memorial Hospital, Jarrow

This hospital, which has been in danger of closing down, now has its continuance assured. It owed a sum of money, consisting of loan and interest, amounting to £2875 to Palmer's Shipbuilding and Iron Company, but with the consent of the debenture holders and the High Court this has been cancelled.

Fellowship of Medicine and Post-Graduate Medical Association

The following courses have been arranged to take place during the latter part of May, and during June: thoracic surgery at the Brompton Hospital (May 24th to 29th); urology at St. Peter's Hospital (May 31st to June 12th); gynaecology at the Chelsea Hospital for Women (June 14th to 26th). Week-end courses will be held as follows: physical medicine at the St. John Clinic and Institute of Physical Medicine (May 22nd and 23rd); children's diseases at the Princess Elizabeth of York Hospital (May 29th and 30th); general medicine at the Prince of Wales Hospital (June 5th and 6th), and general surgery at the same hospital (June 19th and 20th); obstetrics at the City of London Maternity Hospital (June 12th and 13th). A clinical and pathological M.R.C.P. course will take place at 8 p.m. on Tuesdays and Thursdays at the National Temperance Hospital (June 1st to 17th). Other M.R.C.P. courses include chest diseases at the Brompton Hospital (twice weekly at 6 p.m. June 7th to July 13th), heart and lung diseases at the Victoria Park Hospital (Wednesdays and Fridays at 6 p.m. June 9th to July 3rd), neurology at the West End Hospital for Nervous Diseases (June 21st to July 3rd). Detailed syllabuses of all courses can be had from the secretary of the fellowship at 1, Wimpole street, London, W. The annual dinner-dance of the fellowship will take place at Claridge's Hotel, on Friday, May 28th.

The Central Council of Recreative Physical Training should in future be addressed at Abbey House Victoria street London SW 1

Merseyside Medical Practitioners Association

At a recent conference of medical practitioners held at the Liverpool Medical Institution the aims and objects of this association were unanimously approved and the support of its work was recommended (see *THE LANCET* April 24th p 1006)

National Institute of Industrial Psychology

Under the Heath Clark bequest three lectures under the general title of time and movement study will be given at the London School of Hygiene and Tropical Medicine Keppel-street W C at 5.30 p.m. on Mondays May 24th 31st and June 7th. The lecturers will be Mr G. H. Miles D.Sc. formerly director of the Institute, Miss A. G. Shaw investigator to the Metropolitan Vickers Electrical Company and Mr J. A. Edgell investigator to the Institute.

Royal Institute of Public Health

The council of this institute have awarded the Harben gold medal to Sir Gowland Hopkins O.M. F.R.S. professor of biochemistry in the University of Cambridge. The medal is awarded triennially to the person who in the opinion of the council has rendered the most eminent services to public health. Past recipients include Louis Pasteur, John Simon, Max von Pettenkofer, Lister, Koch, Metchnikoff, Behring, Roux, Ronald Ross, Sherrington, and Kitasato.

Treloar Hospital and College

On April 30th the trustees of the Lord Mayor Treloar Cripples Hospital and College at Alton entertained the honorary medical board to dinner at the Barbours Hall. Colonel Frederick Lawson, the chairman, said that eight years had passed since the last occasion of the kind and spoke of the appropriateness of meeting in the City. One lord mayor, Sir William Treloar, was the founder and inspirer of the work; another Sir William Dunn had acted as treasurer; and many of their successors had recognised their paternal duties. The work of the medical board he continued had expanded since the definition of cripple had been extended to almost every kind of disability, and the devotion of its chairman, Mr O. L. Addison for all these years is beyond any power to describe. The first of the board's two functions was to put the ideas of Sir Henry Gauvain, the medical superintendent before the trustees—ideas that had won the hospital a world-wide reputation. Their second function was to engage in the actual work of the hospital and Colonel Lawson expressed the trustees' high appreciation of the services thus given. Mr Addison responding for the board, spoke of changes in the type of patient and the severity of the disease seen at Alton. The hospital he had founded to deal with surgical tuberculosis which was then unprovided for otherwise the cases being crowded into children's hospitals under unsuitable conditions. Other institutions had since been started and surgical tuberculosis was now a disappearing disease unfamiliar to the younger medical generation. At Alton instead of a nine months waiting list they now had very few cases of tuberculosis waiting to come in, and they had therefore enlarged the scope of the hospital so that they were prepared to take almost any kind of disease. Sir Henry Gauvain who proposed the health of the City Corporation disclaimed credit for the hospital but said his life there had been very happy. Sir Charles Batho responding said that the City had never dispensed money to better purpose than to Alton. Sir Charles Gordon Watson proposing The Worshipful Company of Barbours gave his reasons for thinking that their picture of Henry VIII presenting the charter though true, think it is by Holbein is really only a copy of the one belonging to the Royal College of Surgeons in England. But Mr Maurice Hovenden the master refused to be drawn into the controversy and contented himself and his hearers by showing some of the company's other treasures.

Those present included Sir Frederick Mervin, Mr F. H. Treloar and Mr T. J. Harrowing (treasurers), Mr D. H. G. Holborow (master) and the following members of the medical

board or consulting staff: Mr Adkin, Mr P. Maynard, Mr R. S. Brew, Dr Reginald Lightwood, Mr L. A. Lindsay, Dr L. S. T. Burrell, Dr J. T. Hunt, Mr T. Pomfret, Mr R. Charles Gordon Watson, Prof. E. W. Hey Groves, Dr J. H. Thurnfield, Mr A. Simpson-Smith, Dr F. H. Young, Mr N. A. Jory, Mr J. H. Doggart, Dr R. A. Lyster and Mr R. L. Vollum D.Phil.

Birmingham Hay fever Clinic

At the annual meeting of the Birmingham Ear and Throat Hospital it was announced that a clinic has been established there this year where treatment will be available for those who suffer from hay fever.

Birmingham United Hospital

This hospital (formerly the General Hospital and the Queen's Hospital) during last year treated 121,303 patients. There was a small surplus on the year's workings, and an increase of nearly £6000 in ordinary income. The contributory association gave £70,925 an advance of £3000 on the previous year.

Tuberculosis in Sweden

The Swedish National Anti-Tuberculosis Association is arranging an inquiry into the incidence of tuberculosis in various trades and occupations especially among workers aged 18-25. An inquiry carried out by students on their own initiative showed that at least 2 per cent were infected, most of them having no knowledge of the fact. Since then typographers, tobacco-workers, and bus employees have been investigated and are said to have proved surprisingly free from the disease. According to the Swedish International Press Bureau a study of 14,000 children going on in the Norrland provinces shows that in those regions of the far north the death-rate from tuberculosis is three times as great as in more southern provinces. Recently however the number of fatal cases has considerably dropped.

Golden Jubilee of St John Ambulance Brigade

The St John Ambulance Brigade will celebrate its jubilee after the coronation beginning with a reception at St John's Gate on May 14th. It was formed in 1887 and by its connexion with the Order of St John of Jerusalem is part of the oldest order of chivalry in the world, having its commencement in the eleventh century. The strength is now 101,917 (men, women, and cadets) in this country and overseas. As commandant-in-chief of the nursing corps and divisions the Queen will take part in the jubilee celebrations by reviewing the Brigade in Hyde Park on May 22nd. Other arrangements include a garden party at St James's Palace on May 18th given by the Duke of Connaught as grand prior of the Order, a service at St Paul's on the 23rd, and an investiture at Buckingham Palace on the 26th.

Tuberculosis Association

The annual provincial meeting of this association will be held at the Central Library, Manchester, on June 10th, 11th, and 12th under the presidency of Dr S. Roodhouse Glove. The first session will begin at 2.15 p.m. on June 10th when Dr Geoffrey Marshall and Mr H. Morrison Davie will read a paper on how long collapse therapy should be delayed. Mr J. E. H. Roberts will also speak on bronchiectasis in pulmonary tuberculosis and Dr O. M. Mustal (Montana) on pleural effusions after thoracoplasty. On the following morning the first paper will be given by Dr P. J. L. de Bloeme (Laren, Holland) on the treatment of unilateral pulmonary tuberculosis. Afterwards there will be a symposium on difficulties in dealing with the tuberculous problem at which Prof. A. Ramsbottom will speak as a consulting physician. Dr W. F. Jackson as a general practitioner, Dr A. Dove Cornac as medical superintendent of a mental hospital, Dr R. I. Lane as medical officer to a large factory, and Dr D. I. Sutherland as a tuberculous officer. In the afternoon a visit will be paid to the Manchester Sanatorium at Baguley. At the last session Dr J. B. McDouall will read a paper on the roentgenograph and Dr C. S. Anagnostis a paper on artificial pneumothorax in children. Problem cases will be presented by Dr L. H. A. Lask and Dr G. Jewell. In the afternoon a visit will be paid to other sanatoriums in the neighbourhood. Further information may be had from the hon. secretary of the association, Marston House, 26 Portland place, London W. 1.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary—Second Hon Ophth Surgeon
Aldincham General Hosp—Sen and Jun H S's, at rate of £160 and £120 respectively
Ashton under Lyne District Infirmary—Res Surg O, at rate of £200
Barnsley, Beckett Hosp and Dispensary—Cas O, £250
Battersea General Hosp Battersea Park S W—Res H S, at rate of £130 Also H P and Cas O, at rate of £120
Bedford County Hosp—Second H S at rate of £150
Benenden Kent National Sanatorium—Med Supt, £200
Birmingham Ear and Throat Hosp—Second H S, £150
Birmingham, Queen's Hosp—Res Surg O, £150
Boltonbroke Hosp Wandsworth Common S W—Cas O and H S, each at rate of £120
Boyle General Hosp—Hon Orthopaedic Surgeon
Bolton Park Colony, near Chertsey Surrey—Med Supt, £1000
Bournemouth, Royal National Sanatorium—Res Asst M O, £200
Bradford Children's Hosp—H S £100
Brighton Royal Alexandra Hosp for Sick Children—H S, £120
Brighton Royal Sussex County Hosp—H S, £150
Bristol Royal Infirmary and Bristol General Hosp—Two Hon Radiologists Also Radio Diagnostician £500
British Postgraduate Medical School Ducane road, W—Asst in Bacteriology in Dept of Pathology £300
Cardiff King Edward VII Welsh National Memorial Assoc—Three Area Asst Tuber Physicians each £500
Clewer Sanatorium for Children Hensall Cheshire—Res Asst M O, £300
Connaught Hosp, Walthamstow, E—Cas O at rate of £100
Corenty and Warwickshire Hosp—Hon Asst Surgeon Also Res H S, Cas O, and Res H S for Aural and Ophth Depts each £125
Croydon County Borough—Deputy M O H and Deputy School M O, £720
Derby, County Mental Hosp, Mickleover—Laboratory Asst £200
Deursburg and District General Infirmary—Second H S, £150
Downpatrick Down County Mental Hosp—Jun Asst M O £350
Dudley, Guest Hosp—Second H S, £120
East Ham Memorial Hosp Shrevebury road, E—H S to Spec Depts, and Cas O, at rate of £120
Exelina Hosp for Sick Children Southwark, S E—H P at rate of £120
Exeter, Royal Devon and Exeter Hosp—H S to Ear Nose, and Throat Dept, at rate of £150
Farnborough Public Assistance Hosp—Res Asst M O £250
French Hosp and Dispensary Shaftesbury-avenue W C—Hon Radiologist
Gloucestershire Royal Infirmary &c—H P, at rate of £150
Gordon Hosp for Recal Diseases Fauxhall Bridge road, S W—Res H S at rate of £150
Great Barr Park Colony, near Birmingham—Jun Asst Res M O £275
Hampstead General and North West London Hosp, Haverstock hill, N W—Cas M O and Cas Surg O for Out-patient Dept each at rate of £100
Hastings Royal East Sussex Hosp—Jun H S, at rate of £150
Hosp for Tropical Diseases, 25 Gordon street W C—Hon Asst Physician Pathologist, £750 Also H P, at rate of £120
Huddersfield County Borough—Asst School M O £500
Hull Royal Infirmary—First H S H S to Ophth and Ear Nose and Throat Dept, and Second Cas O each at rate of £150
Iford King George Hosp—H S, at rate of £100
Kettering and District General Hosp—Res M O and Second Res M O, at rate of £160 and £140 respectively
Leeds General Infirmary—Hon Physician
Leicester City Mental Hosp, Humberstone—Locum Tenens Asst. M O, 10 guineas per week
Liverpool City—Pathologist £750
Liverpool Heart Hosp—Hon Asst Physician
London County Council—Temp District M O, £250 Also Temp M O, at rate of £100
London Homoeopathic Hosp Great Ormond street, W C—Gynaecological H S at rate of £100
London Jewish Hosp Stepney Green E—Res M O and H P at rate of £150 Also Res H S and Res Cas O, each at rate of £100
London University—University Readership in Obstetrics and Gynaecology for British Postgraduate Med School £800
Malden Preston Hall Sanatorium—Asst M O at rate of £200
Maidstone West Kent General Hosp—H S £175
Manchester Ancoats Hosp—Hon Reg for Ear Nose and Throat Dept Also Orthopaedic Reg £50
Manchester City Education Committee—Psychiatrist, £500
Manchester, Park Hosp Dwythulme—Second Res M O at rate of £225
Manchester Royal Eye Hosp—Jun H S, £120
Manchester and Salford Hosp for Skin Diseases—Two Asst M O £100
Middlessex Hosp W—Jun M O for Radio therapy Dept and Asst for Dept of Physical Medicine, each £300
Miller General Hosp Greenwich road S E—Two H P's Also H S each at rate of £100
Newport Mon Royal Gwent Hosp—H S, at rate of £135
Northwood Mount Vernon Hosp—Clin Pathologist £500
Nottingham General Hosp—H S to Ear Nose and Throat Dept and Two Res Cas O's each at rate of £150
Oldham Municipal Hosp—Res Asst M O at rate of £200

Oldham Royal Infirmary—H S at rate of £175
Oxford Eye Hosp, Walton street—H S to Ophthalmic Dept, £150
Plymouth Prince of Wales Hosp—Res Surg. O H S at rate of £225 and £120 respectively Jun H S, at rate of £175
Also Hon Physician Hon Physician with charge of Out patients and Hon Ophth Surg
Queen Charlotte's Maternity Hosp, Marylebone road W—Res Anaesthetist at rate of £100, Res Anaesthetist and Dist Res M O, at rate of £200 Also Asst Res M O £50
Queen's Hosp for Children Hackney road E—H S, at rate of £100
Reading Royal Berkshire Hosp—Res Cas O, and H S to Spec Depts each at rate of £150
Rotherham Hosp—Cas H S £150
Royal Chest Hosp, City road, E C—Clin Asst
Royal Free Hosp, Gray's Inn road, W C—Asst Physician Also Sen Res M O £150
Royal Naval Medical Service—M O's
Royal Waterloo Hosp for Children and Women Waterloo-road S E—Res Cas O at rate of £150 Also H S at rate of £100
St Bartholomew's Hosp E C—Asst Physician and Asst Director to Med Professorship Unit
Salisbury General Infirmary—Res M O, £250
Shrewsbury Royal Salop Infirmary—Res H S at rate of £150
Southampton, Royal South Hants and Southampton Hosp—Sen H S £200 H P, H S Res Anaesthetist and H S &c, and Cas O, each at rate of £150
Stoke-on-Trent Burslem Haywood and Tunstall War Memorial Hosp—Res H S, at rate of £175
Stoke-on-Trent, North Staffs Royal Infirmary—H S for Aural and Ophth Dept at rate of £150
Sunderland Royal Infirmary—Two H S's and one H P each £120
Surrey County Council—Asst M O, £600 Also Jun Asst M O for County Sanatorium, at rate of £350
Taunton and Somerset Hosp—H P at rate of £100
University College Hosp Gower-street W C—Hon Physician to Physiotherapy Dept
Uxbridge Hillingdon County Hosp—Jun Res Asst M O, at rate of £250
Victoria Hosp for Children Tile street S W—Physiotherapist £50
Wear Hosp, Grove-road Balham S W—Jun Res. M O., £150
West Ham County Borough—M O H and School M O., £150
Also 2nd Asst. Res. M O for Central Home, Leytonstone £350
West Suffolk County Council—Asst County M O and Asst School M O, £500
Wickford Runcell Hosp—Asst Res Physician £350 Also H P, at rate of £150
Wolverhampton New Cross Hosp—Res Asst M O £200
Wolverhampton Royal Hosp—H S's, at rate of £100
Woolwich and District War Memorial Hosp, Shooters hill, S E—Three Hon Anaesthetists
The Chief Inspector of Factories announces a vacancy for a Certifying Factory Surgeon at Longridge Lancashire

Births, Marriages, and Deaths

BIRTHS

NICOLSON—On April 13th at Portsmouth the wife of Surg Lt-Comdr J H Nicolson R.N. of a son
NORMAN—On April 23rd, at Eton, the wife of Dr H Bathurst Norman of a son
PICKEN—On April 27th, the wife of Dr C B Picken Basset Southamton of a daughter

MARRIAGES

COLTART-ASKEW—On April 24th at the Church of St Bartholomew the Great E C William Derrick Coltart F.R.C.S. Eng to Margaret Askew
FORSYTH-RULAND—On April 16th at St Mary's River Labrador Charles Hogarth Forsyth, M.R.C.S. Eng. International Grenfell Association Service, to Clayre Louise Ruland
TEAR-GRACEY—On April 24th at Burrington Dore, Robert Donald Tear M.R.C.S. Eng., of Ramsey, Isle of Man to Kathleen Agnes youngest daughter of Lt-Col and Mrs T Gracey

DEATHS

DILLON—On April 27th, at Oxford Luke Gerald Dillon O.B.E. M.D. R.U.I. of Bodicote Oxon in his 76th year
LE PELLEY—On April 30th at West Bridgford Notts Amelia Maitland le Pelley M.B. Lond
PARKER—On April 26th at Clifton Bristol George Parker M.D. Camb, LL.D.
SARRA—On April 30th in London William Henry Sarra M.R.C.S. Eng. of Leigh-on-Sea Essex
V.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births Marriages and Deaths

GIFT OF MATERNITY HOSPITAL—A maternity hospital is being given by Mrs Fife-Jameson to the county of Angus It is estimated it will cost £7000

NOTES, COMMENTS, AND ABSTRACTS

THE MEDICAL HISTORY OF WILLIAM THE CONQUEROR

BY R R JAMES

As a general rule it is an unprofitable venture to speculate on the pathology of a hypothetical case such as that of the last illness of the Conqueror. But William's death offers food for reflection and may even be of interest to such minds as suffer from a taste for general information not promptly checked of which type the classical example is Mr. Joseph Painsbury.

Everyone knows that the Conqueror died as the result of an abdominal injury received during the sack of Mantes in 1087. At this time he was about sixty years of age. Of exceptional strength he had been a warrior from his youth upwards, even from the moment of his birth his strength was apparent, for when he was laid on the floor after delivery the gossips noticed how he grasped the rushes in his little fists. His life gave ample opportunities for receiving hard knocks.

Before discussing his last illness I should like to draw attention to two serious illnesses of which we have records. The first of these occurred most probably in the year 1002. It is not mentioned by any of the chroniclers and we only know of it from a charter in the cartulary of the cathedral church of St. Mary Coutances. A transcript of this deed is given by Round in his *Calendar of Documents in France*, of which great series it is No. 957. It is undated and is a recital of a charter of William, Duke of the Normans to the Church of St. Mary. William, while living, ill at Cherbourg, vowed that he would establish three Canons in the church if God and St. Mary would miss him from his sickness when his life was wholly despaired of and he was laid on the ground as at the point of death and gave the Canons of that church the relics of the Saints which he carried (about) in his own chapel.

One can only suppose, in view of William's after-history, that this must have been some acute infection, but I would not like to offer a diagnosis. Laying a patient on the ground when at death's door would not seem to be the best treatment for such conditions as enteric or pneumonia, but whatever was the matter the crisis of the illness seems to have coincided with the patient being turned out of bed on to the floor. William's second illness occurred in the year of the Conquest. After Hastings the Conqueror had made his base secure by occupying Dover the castle of which according to William of Poitiers he had made into a hospital for invalid soldiers the army having been seriously infected by dysentery. He then marched towards London along the Roman road, but when at Canterbury, or thereby, he was seized by violent illness which kept him out of action for a month. I imagine that this illness may have been an acute gastro-intestinal infection.

In spite of these illnesses William must have made a complete recovery as is instanced by his long march to Exeter early in 1088 by his harrying of the North in the following year and by that ghastly march across the Fenlands from York to Chester in the mid-winter of 1089-90. Coming now to the last year of his life we know that William had become exceedingly corpulent. He was resting at Rouen when some kind friend repeated to him the jest of the King of France. This was to the effect that William was lying in like a woman just delivered from travail. William came out with more than his usual calm for he swore that by the resurrection and splendour of God when I go to Ma^{ns} after my confinement I will light him up a hundred thousand candles. And about the middle of August before August 16th according to Florence of Worcester he invaded French territory and sacked Mantes.

It should be remembered that most of the English chroniclers were writing at a date later than that of 1087. Even that old gossip Orderic, who was more or less contemporary with the event does not say anything about any abdominal injury. I suspect that the authority for the statement is William of Poitiers but his works are not accessible to me. Roger of Wendover and William of Malmesbury¹ the former probably copying the latter both mention the fact that the Conqueror received an injury while his horse was leaping a ditch. But most of the other chroniclers merely allude to the heat of the flames and the unequal temperature while Roger of Howden states that on his return from Mantes William was attacked by dreadful pains in the intestines from which he grew weaker every day.² William of Malmesbury states that the physicians at Rouen³ on examining the urine predicted certain death. The Conqueror did not die till the morning of Sept. 9th so that at least a month intervened between the injury and death.

If one examines a reproduction of the Bayeux tapestry one gets some idea of the type of saddle of the period. It had a high pommel in front and apparently behind also. In one picture it looks as if the pommel reached nearly up to the level of the umbilicus in front and well into the lumbar region behind. William of course would have been clad in mail at the time. He was conscious and able to speak until the end. What lesion could have been produced in such a case? I think we may rule out any perforation of a hollow viscus. Was the extreme pain renal or biliary colic? Was there blood in the urine which made the physicians so sure of death? No one can say for certain, but I do not think the case can have been one of intestinal obstruction from such a condition as strangulated hernia. The possibility of injury to the perineum, bladder, or urethra has to be considered as well as an umbilical hernia, but I should like to suggest biliary or renal colic.

The last scene is in the Abbey of Caen. When they came to put William in his coffin the monks anticipating the lament of Mr. Soverbury that a few inches over one's calculations make a great hole in one's profits had made the stone coffin too small. In the attempt to force the body into the abdomen burst and a horrible stench filled the whole church. In writing this paper I have consulted Freeman's *Norman Conquest* and the *Life of the Conqueror* by Prof. Stenton as well as the chroniclers mentioned.

REFERENCES

- 1 William of Malmesbury gives the hearsay report "*Dixit rapturam quod in anteriori parte selle venter protruderet*"
- 2 Florence of Worcester who I almost omit in my story with the great states that on William's return to Normandy after the sack of Mantes *divus rancorem dolere illum apprehendit*.
- 3 The physicians were Gilbert Mammet, and Guntard of Jumièges.

MEDICAL EVIDENCE AT LONDON OMNIBUS INQUIRY

On May 3rd at the first meeting of the court of inquiry appointed by the Minister of Labour to investigate and report on the issues of the London omnibus strike Mr. Bevin in presenting the case for the men called attention to the uncertainty of meal reliefs and said that the physical reactions of the men were such that they made the men different from those found in other industries, different in the sense that the reactions produced a psychology all its own. He added that there had been a suggestion that carbon monoxide was the principal cause of the trouble and the union had succeeded in getting the problem referred to the Industrial Health Research Board where it had been now for a couple of years. Dr. James Woodall, chief medical officer at Manor House Hospital, said that from his work there he had

the impression that there was an altogether undue incidence of gastric illness among both drivers and conductors, but admitted that he had not had time to analyse the hospital records. Dr H B W Morgan, medical officer to the Trades Union Congress, said he had also been struck by the number of men in transport work who complained of gastric symptoms.

At the second meeting of the court on May 4th Prof Millais Culpin, M D, who was called by Mr Bevin, said that he had made a study of occupational circumstances and physical types of patients with organic diseases of the stomach. Three years ago he took the opportunity of examining a number of bus drivers at the Manor House Hospital diagnosed as suffering from gastric conditions. He saw 17 cases himself and 14 were examined by an assistant—primarily to ascertain the extent of nervous symptoms. The interviews lasted from 30 to 40 minutes, the men being allowed to talk freely. He found that in some cases the nervous symptoms were really the ones that mattered. He did not always agree with the hospital diagnosis. Of the 31 cases there were 4 whose nervous symptoms were severe enough to call for treatment, some of them being, in his opinion, unfit to drive. From 8 men he elicited no nervous symptoms, but added a note implying his opinion that the men were of stable type but might break down. In reply to the chairman, Dr Culpin said that 17 of the men complained spontaneously about speed, 10 of inspection, 9 about fumes, 7 about vibration, and 5 complained of being afraid of the company's medical officer.

In reply to a question from Mr Bevin, Dr Culpin said that this preliminary examination had led him to the view that there was at least a strong *prima facie* case for a very thorough investigation into the effect of all these things on the men.

The court consists of Mr John Forster (chairman), Sir Arthur Pugh, and Mr Basil Sanderson.

DANGEROUS DRUGS REGULATIONS

WE have received from the Home Office copies of draft regulations which it is proposed to make under Sections 3 and 7 of the Dangerous Drugs Act, 1920. The proposed new regulations under Section 3 which relates to raw opium, coca leaves, and Indian hemp, will make no change in the existing law and are solely for the purpose of consolidating the rules in force by which the distribution of the substance named is controlled and restricted. The main purpose of the proposed new regulations under Section 7 of the Act is to make substantive the provisional rules which were made a year ago with the object of bringing the regulations of 1928 into conformity with the Poisons and Pharmacy Act, 1933, but it is also proposed to make certain other amendments. We will refer only to those which have a bearing on the prescribing of dangerous drugs. In Regulation 8 a slight alteration is made so that the provision exempting prescribers of medicines under the National Health Insurance Acts from fulfilling certain obligations shall be extended to prescriptions given in connexion with the health services of local authorities.

THE MEANING OF "TWO OR THREE TIMES"

Amendments are being made in paragraphs 2 and 3 of Regulation 9 for the purpose of resolving doubts which have arisen as to the meaning of "two or three times." The proposed new paragraphs are as follows—

(2) If a prescription expressly states that it may subject to the lapse of a specified interval or of specified intervals, be dispensed a second or third time, the drug or preparation thereby prescribed may, as the case may be, be supplied a second or a third time after the specified interval or intervals and no more, but, subject as aforesaid, a prescription shall not for the purposes of these regulations be taken to authorise the drug or preparation prescribed to be supplied more than once.

(3) The person dispensing a prescription shall, at the time of dispensing it, mark thereon the date on which it is dispensed, and in the case of a prescription which may be dispensed a second or third time, the date of each occasion on which it is dispensed, and shall, unless it is a health prescription, retain it and keep it on the premises where it is dispensed and so as to be at all times available for inspection.

Alterations proposed in Regulation 11 are the insertion of the common names (eucodal) for dihydrohydroxycodone, (dicodid) for dihydrocodone, and (dilaudid) for dihydromorphine.

AN AMENDMENT AND A REDRAFTING

Regulation 14 is being amended in order to make it clear that signed orders for dangerous drugs must be preserved for a period of two years in the same way as other documents relating to such drugs.

Regulation 16, as redrafted, is as follows—

Nothing in these Regulations shall apply to—

(a) any of the drugs or preparations mentioned in the fourth schedule (see below) to these regulations or to a drug or preparation which has been denatured in manner approved by the Secretary of State,

(b) (i) any prescription issued for the purposes of a scheme for testing the quality and amount of the drugs and appliances supplied to insured persons under the National Health Insurance Acts, 1924-1935, and the regulations made thereunder, (ii) any prescription issued to a sampling officer for the purposes of the Food and Drugs (Adulteration) Act, 1928.

THE FOURTH SCHEDULE

The amendment to the Fourth Schedule is one of the most important being made in these regulations. In order to bring English legislation into line with the International Conventions with regard to "exempted preparations," a Declaration by His Majesty in Council is being made with effect from July 1st, exempting from the Acts (and consequently the regulations) all the preparations which have been exempted from the International Opium Convention, 1926, on the recommendation of the Health Committee of the League of Nations. The effect of this Declaration in Council is that from July 1st the Dangerous Drugs Acts will not apply to the preparations named in the Schedule to the Declaration, and therefore export licences will not be required for the export of such preparations. The Fourth Schedule is as follows—

Pulv. Cretæ Aromat. c. Opio, B.P. 1932.

Cocaine Eyedrops—a preparation consisting of an admixture of cocaine in castor oil with mercuric chloride in a proportion of not more than one part in 200 of cocaine and not less than one part in 3000 of mercuric chloride.

Methylmorphine and ethylmorphine and their respective salts and any preparation, admixture or other substance containing any proportion of methylmorphine or ethylmorphine associated with an inert substance whether solid or liquid, and preparations and admixtures or other substances containing more than 2.5 per cent of methylmorphine or ethylmorphine (calculated as pure drug) associated with other medicinal substances.

Methylmorphine and ethylmorphine will be exempted from these regulations because they are subject to a separate code of regulations which remains unaltered. Certain preparations of these drugs are also included in this Schedule because as the result of an Order in Council, Part III of the Dangerous Drugs Act, 1920, is being applied to them as from May 1st, but they are not being brought under these regulations which deal only with the home trade. A further amendment to this Schedule is the insertion of cocaine eyedrops. The effect of this amendment is to remove this preparation from control by the regulations. In consequence, factory owners and others will be free to purchase this preparation and the authorities granted in 1921 to these persons will be revoked as from the date on

which these regulations come into operation *Pule Creta Aromat c. Opio* will continue to be exempt from the regulations. Licences will be required, however for the export of drugs in this schedule from the United Kingdom

PRESERVATION OF MENTAL HEALTH

FOR the prevention or avoidance of a mental break-down Dr O C Easterbrook recommends that the person with a nervous predisposition should clearly recognise his weakness and that others with whom he comes into important contact should recognise it as well (*Med Offr* April 17th p 181). The personal or direct evidence of instability will include a previous history of any psychosis or neurosis or of morbid tendencies faulty habits and vices; some congenital or nervous defect a neurotic or degenerate physiognomy or physique or an abnormal reaction to the ordinary experiences of life. The great consolation which he sees for the person with a nervous constitution is that the neurotic is the potential pioneer neurosis and psychosis are weeds, indicating a fertile soil which will produce genius and inventive ability. If the neurotic would avoid a break-down says Dr Easterbrook he must lead a quieter life and take greater care of his health than his more stable brother. There are of course types of neurosis which have as their principal expression a pampering of the body or mind and a shrinking from stress and responsibility and Dr Easterbrook would probably admit that for patients like this it is more important to get outside themselves and experience the rough-and-tumble of life. There are many psychoses, minor as well as major, which cannot be avoided by any amount of care or self knowledge; illnesses which in fact forbid self knowledge by their very nature.

REGALCITRANCE AT MEAL-TIMES

AMONG journals of practical puericulture the monthly magazine called *Parents* now in its fourth volume, has won itself a good place. Those who have children on their minds will nearly always find something enlightening in its pages and the contributions are apt to be both sane and interesting. Contributors to the March issue include Dr Victoria Bennett Dr Winifred de Kok, Dr A Morris Johns Dr L Appell and Dr Lindsey Batten. Dr Batten's article entitled *Do you dread meal-times?* is concerned with the child who does not respond to the suitable food provided for him and his advice deserves wider circulation. He begins by pointing out that food requirements vary enormously and that the parent must not insist too much on convention—some children seem to have a natural preference for the continental breakfast. The real question is whether the child thrives on what he takes. If he is actually eating too little for his health and if his small appetite is a cause rather than a symptom it will be necessary to look into his motives for refusing food. The self-assertive instinct—the desire for fame, notoriety or power—causes most of the trouble and Dr Batten's rule is that it is always wrong to comment on a child's behaviour in his presence. We should treat him in this respect exactly as we treat a respected friend or guest. We do not comment in his presence on our guest's small appetite or his habit of not eating fat; it would offend him and it will either offend our child or it will make him feel important and encourage him to do it again. There is very little to choose between praise and blame. All comment is bad. A warning is also given against conflicts and it is here that the adult should exercise his far seeing sagacity. Is it to be a row about pudding? Off no pudding at all. Who knows but by tea-time it may be regarded as a treat. Is it some particular article of diet? Banish it from the child's plate or even from the table for some weeks and try again. As for discipline Dr Batten holds it perfectly reasonable to make and enforce a rule that

a child who refuses his meat course shall have no pudding or that he shall finish what he has asked for; but orders must be reasonable polite and unemotional the mother ought to have a shrewd idea that they are likely to be obeyed without a fuss and (once more) there must be no comments at all. The child must be induced to believe that whether he eats or leaves his dinner is a matter of indifference to everyone present but at the same time everyone does as a matter of fact eat their dinners and he will do the same.

Parents of younger children may get more immediate profit from an article on *Peaceful Bedtimes* by Mary Chadwick, S.R.N., which appears in the May issue of the same journal.

THE LURE OF LONDON

IN his third report on the special areas the commissioner Mr Malcolm Stewart drew attention to the recent immense growth of the outer ring of London the population of which in the twelve years 1921-33 increased by 1,000,222 as compared with an increase of 1,307,078 in the rest of England and Wales. This increase was due mainly to migration from inner London and from the provinces. The reduction of the congestion of inner London is of course, wholly desirable. Migration from the provinces depends largely on the fact that London the best market in Europe provides an irresistible attraction to new ventures. To the Londoner this concentration of population brings with it increasing difficulties, expense, and loss of time in the transport of himself and his goods and makes him increasingly vulnerable to attack. To the rest of England and Wales this removal of a largely young adult population to London and the setting up of most new industries in that area is a serious matter and is well exemplified by the returns of the Port of London which has increased its share of the foreign trade of England and Wales from 15 per cent in 1913 to 20 per cent in 1935 while the west coast ports have shown a fall of 11 per cent in the same period.

We see then that the lure of London, the favourite theme of the Victorian novelette is a very real thing at the present day and that the streets paved with gold legend persists in a practical form.

Metropolitan Man—Mr Robert Sinclair sets himself to demolish this legend and to show that every institution and habit of life that the Londoner holds dear is muddled inefficient or undesirable. His business, his leisure, his severals, his public health organisation, education, town planning and transport are discussed in turn and the general impression conveyed is one of unmitigated gloom. The most casual reader is soon driven to remark that things really cannot be as bad as all that. Mr Sinclair's method of producing his effect is firstly to omit any evidence which may show a satisfactory or improving state of affairs and secondly to warp or to state his statistics in such a way as to give an alarming and often misleading impression to the mind of the reader. He omits or explains away such things as the care of the pre-school child at infant welfare centres, the steady fall in infant mortality and tuberculosis and by confusing nutrition with nourishment arrives at the startling result that one in six of London's children is under-nourished. By further arithmetical gymnastics he shows that the children in schools found to be verminous amounted to 14 per cent when the true figure was 3 per cent. When his figures are correct the lay mind may still be led astray. One may quote: 50 per cent of children and 87 per cent of adults are infected with tuberculosis. One in three of Londoners dies in the workhouse. For every minor chance of being killed in a min the Londoner has six chances of injury in the street. He adds to the horror by referring to the pits as a hazard, liable to errors of refraction as blind as and

¹ *Metropolitan Man* by Mr Robert Sinclair, London, A.C.U. and Unwin 1937. 3s. 3d. 11s. 6d.

to minor ailments as disease, and he comes to the conclusion that "the greatest metropolis of the twentieth century is dirty, poor, unorganised, factious, ignorant, aimless, and leaderless" If this does not deter Mr Malcolm Stewart's migrating thousands, nothing will

INACTIVITY IN THE TREATMENT OF PUERPERAL FEVER

THE essence of the "absolute abstinence" method of treating puerperal fever, according to an exponent, J B González, is to refrain from all local examination or treatment, trusting to the patient's own resistance to overcome the infection. The medical attendant must be content, therefore, with a presumptive diagnosis and must be prepared to persist in his course of masterly inactivity even when the patient's condition appears to be growing worse. Writing in the *Semana Médica* for March 4th González says that, since 1919, he has treated all cases of puerperal fever in the maternity department of the hospital at Durand in this way, with results which he describes as excellent. He gives no figures, however, and while he must have credit for early condemnation of unnecessary interference, it is, unfortunately, impossible to believe that the patients' own resources, if left entirely to themselves, can generally be relied upon to reduce the mortality, as in his experience, almost to nil.

THE DIRECTOR OF RESEARCH

THE *Deutsche Medizinische Wochenschrift* for March 19th devotes several pages to a discussion of mentalities and tendencies in such centres of learning as Heidelberg, Würzburg, and Jena. Writing from the Würzburg Medical and Neurological Hospital, E Grafe asks "Are the collaborators of the heads of hospitals and institutes to work as an orchestra with a definite programme and playing previously chosen music under the baton of a conductor? Are we to train members of an orchestra or soloists and prospective conductors?" In support of the latter alternative, reference is made to two great German physiologists living at the end of the last century. Carl Ludwig and Eduard Pfüger may rank as equals as far as their own contributions to science are concerned, but their influence on their surroundings was as dissimilar as possible. Pfüger had need only for assistants willing to work on the lines he laid down, and he parted with them as soon as he caught them straying. The result of this policy was that he founded no great school. Ludwig, on the other hand, filled many a chair of learning throughout the world with his pupils, some of whom followed disciplines quite different from his own. He was satisfied with merely stimulating his pupils to stimulate themselves, and he left it to them to follow their own bent. He believed in developing the individuality and gifts of his pupils in as congenial a scientific atmosphere as possible. It is pleasant to-day to see this contrast drawn by a German who leaves no doubt that it is Ludwig's method that has his sympathies.

THE COLORIMETRIC DETERMINATION OF OXIDATION-REDUCTION BALANCE—A communication from the B D H Analytical Laboratories. Second edition, revised. Published by The British Drug Houses Ltd., Graham-street, London, N 1. Pp 19. A compact introduction to the theory and practice of the use of indicators to determine oxidation-reduction potentials is provided by this little book. It describes simply the nature of electrode potentials, gives the oxidation-reduction curves of some of the more usual indicators, and briefly indicates for what purposes these indicators may be employed. Practical methods such as the testing of sewage effluents, the testing of milk by the methylene-blue test, and the recent applications of the indophenol indicators to assay of vitamin C are mentioned. A brief guide to a few of the numerous publications on this subject is included. The book is free to medical men.

Appointments

ABERNETHY, CHRISTINE, M B Glasg, D P H D M R. Radiological Officer at Ancoats Hospital Manchester.
ALLEN, J S, M B Belt, D P M. Second Assistant Medical Officer at the Manor, Epsom (L.C.C.).
BELL, G J, M B Lond, D P M. Second Assistant Medical Officer at Park Prewett Mental Hospital Basingstoke.
DUCKWORTH, G, M R C P Lond, Hon Dermatologist to St John's Hospital, Lewisham.
LISNET, A A, M B Duhl, D P H. Deputy Medical Officer of Health and Deputy School Medical Officer for Leicestershire.
MITCHELL, M B Belt, F R C S Edin. Resident Surgical Officer at the Beckett Hospital and Dispensary, Barnsley.
MURRAY, R C, M B Camb, F R C S Eng. Registrar to the Orthopaedic and Fracture Department of the Royal Infirmary, Liverpool.
RUDOLF, G DE M, M R C P Lond, D P H, D P M, Hon Physician to the British Hospital for Functional Mental and Nervous Disorders (Forbes Winslow Memorial), London.
SANDS, D E, M R C P Edin., D P M. Second Assistant Medical Officer at Claybury Hospital (L.C.C.).
SUGGITT, S C, M B Lond, F R C S Eng, Assistant Surgeon to the Royal Ear Hospital University College Hospital, London.
THIPPET, G O, M B Lond, F R C S Eng, Assistant to the Orthopaedic Department of the Croydon General Hospital.
WARDLE, E N, M Ch Orth Liverp, F R C S Eng, Hon Assistant Orthopaedic Surgeon to the Royal Southern Hospital, Liverpool.

Medical Diary

SOCIETIES

MEDICAL SOCIETY OF LONDON, 11 Chandos street, W.
MONDAY, May 10th—8 P.M., Annual General Meeting.
8.30 P.M. Dr R. A. Young. Prospective and Police in Practice. (Annual oration).
MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY.
THURSDAY, May 13th—8.30 P.M. (11 Chandos-street, W.)
Dr T. A. Ross. The Psychological Approach.
WEST KENT MEDICO CHIRURGICAL SOCIETY.
FRIDAY, May 14th—8.45 P.M. (Miller General Hospital, Dr H. V. Morlock. Advances of Modern Medicine. (Presidential address).)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF CAMBRIDGE.
MONDAY, May 10th—5 P.M. (St John's College), Prof. A. V. Hill, F.R.S. The Heat production of Muscle and Nerve. (Linnæus lecture).
UNIVERSITY OF BIRMINGHAM.
TUESDAY, May 11th—4 P.M. Prof. L. G. Parsons. General Nutrition. Nutrition and Nutritional Diseases of the Erythron. The Inter-relation of Iron and Calcium in Nutrition.
THURSDAY—4 P.M. Prof. Parsons. The Role of Vitamin C in Disease. Multiple Deficiency States. The Effect of Certain Alimentary Disorders on the Absorption of Carbohydrates. (William Withering lectures).
BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.
MONDAY, May 10th—2.30 P.M., Dr C. W. Buckley. Arthritis. 4.30 P.M., Dr W. E. Gye. Experimental Cancer Research.
THURSDAY—2.15 P.M., Dr Duncan White. Radiological Demonstration. 3.30 P.M., Mr A. K. Henry. Demonstrations of the Cadaver of Surgical Exposures. 3.30 P.M., Dr Helena Wright. Birth Control.
FRIDAY—2 P.M. operative obstetrics. 3 P.M., clinical and pathological conference (obstetrics and gynaecology).
Daily 10 A.M. to 4 P.M., medical clinics, surgical clinics and operations, obstetrical and gynaecological clinics and operations.
WEST LONDON HOSPITAL POST GRADUATE COLLEGE Hammersmith, W.
MONDAY, May 10th—10 A.M. Dr Post. X Ray Film Demonstration. Skin clinic 11 A.M., surgical wards. 2 P.M. operations surgical and gynaecological wards, medical, surgical and gynaecological clinics.
TUESDAY—10 A.M., medical wards. 11 A.M. surgical wards. 2 P.M. operations, medical, surgical, and throat clinics.
THURSDAY—10 A.M. neurological and gynaecological clinics. Noon fracture clinic. 2 P.M., operations, medical, surgical, genito urinary, and eye clinics.
FRIDAY—10 A.M. medical wards, skin clinic. Noon lecture on treatment. 2 P.M. operations medical, surgical, and throat clinics.
SATURDAY—10 A.M. children's and surgical clinics. 11 A.M. medical wards.
The lectures at 4.15 P.M. are open to all medical practitioners without fee.
MANCHESTER ROYAL INFIRMARY.
TUESDAY, May 11th—4.15 P.M., Mr W. R. Douglas. Lesions of the Common Bile-duct.
FRIDAY—4.15 P.M. Mr D. V. Sutherland. Demonstration of Surgical Cases.

ADDRESSES AND ORIGINAL ARTICLES

OBSERVATIONS ON
MALIGNANT DISEASE OF THE
THYROID GLAND*BY ALFRED HAAS M.D.
OF MUNICH

THE proper study of human life to paraphrase Pope is the study of human relationships. When human beings either as a community or as individuals fail to develop and maintain adequate reciprocal relationships neurosis makes its appearance as may be observed in current European history or amongst the visitors to any medical consulting room! When the cells of which the human organism is composed default in the same way there is engendered disease—inflammation degeneration neoplasm—as may be seen in any operating theatre or post mortem room.

In no cell community is this better illustrated than in the thyroid gland which has to bear a large share of the stresses that the human frame is called upon to endure psychological and chemical. There is no need then for surprise that the thyroid gland reacts in many curious ways some of which it is my purpose to describe here. The results of its failure to function or of its over activity are familiar to all but it is not quite so well known what happens when hypertrophic and degenerative changes pass over the narrow borderline between degeneration and malignancy. It is this aspect which forms the burden of this communication.

There is general agreement that in mountainous countries where goitre is endemic carcinoma of the thyroid is relatively common because it always develops in a gland already the subject of degenerative changes very often the so-called adenomatous or nodular goitre.

Estimates of the frequency of this malignant change vary with different observers, but the following



FIG 1a.—Metastasis of a papillary adenocarcinoma of the thyroid with very large alveoli. The stroma is very rich in fibroblasts.

short statistical summary gives a general idea of its frequency. Of 3,000 cases published by Kocher 2% were proved malignant and 7% were doubtful (0.8 to 8.8 per cent). Wilson investigated 10,682 goitres and among these 207 were malignant (2.78 per cent). I myself observed that among 5,000 goitres operated upon between 1870 and 1930 2% of them were cer-

tainly malignant that is to say 1 in 143 (0.7 per cent). Among these every kind of malignant change was fairly evenly represented. Only true sarcomas were rare (2).

Speaking generally malignant thyroid tumours are rare. The New York State Institute for Cancer



FIG 1b.—The small primary tumour of the thyroid. The picture shows the typical buds of the papillary cancer.

Research reports that in twenty four years there have only been 42 cases that is 0.37 per cent of all malignant tumours.

Carcinoma of the thyroid has one important characteristic which distinguishes it from carcinoma elsewhere. It relatively seldom gives rise to metastases in the lymphatic system but frequently the large thin walled veins on the surface of the goitre are invaded and dissemination takes place by the blood stream.

According to Bartels the lymphatics of the thyroid are arranged in two groups. One runs upwards medially and laterally following the perivascular lymphatic channels and secondary deposits may be found in the corresponding lymphatic glands. The second group runs downwards anterior and lateral to the trachea, and finally drains into the deep cervical and supraclavicular glands and this latter is the commonest site for secondary lymphatic deposit.

As I have said before invasion of the veins is the most frequent path of dissemination and the bones are the most frequent sites for metastases. Osseous secondary tumours are as common as in carcinoma of the prostate. The bones are involved in the following order of frequency: skull spine sternum humerus femur ribs pelvis clavicles jaw radius calcaneum. Visceral metastases are well known to occur often in the lungs sometimes in the liver and are not at all uncommon in the brain.

Another well known and important characteristic of thyroid tumours is that the primary tumour may be very small so small that apart from a histological examination it may not be found, yet the secondary deposits may be large and widespread. It is of interest that bronchial carcinoma sometimes behaves in the same way.

Last year I operated on a patient who had a nodule of the left frontal bone the size of half a crown. It was removed with a large piece of surrounding healthy bone and of the underlying dura which was involved. When I looked at the section it was that of a papillary carcinoma which I thought considerable. Its histological appearance

had its origin in the thyroid gland. As a logical sequel, ten days later I removed a fair-sized nodular goitre from the patient's neck. This was cut in serial sections, and after the most laborious examination of each piece the primary tumour was found, hardly larger than a pea (its histology corresponded exactly with that of the tumours in the skull). Figs 1a and 1b show these two tumours.

On the whole the best classification of epithelial

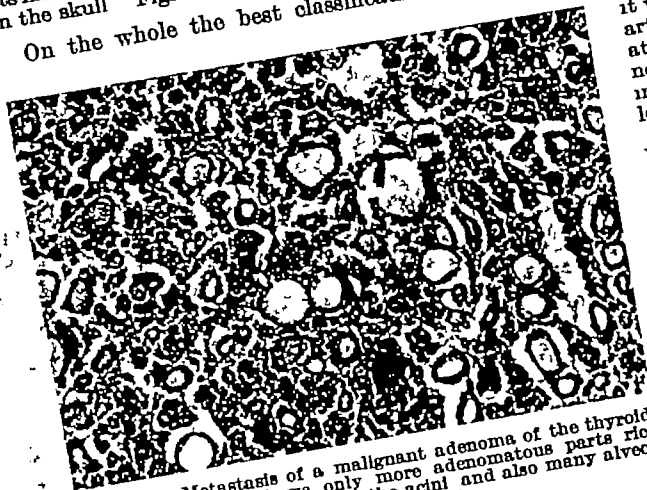


FIG 2a—Metastasis of a malignant adenoma of the thyroid. The metastasis shows only more adenomatous parts rich in cells with compression of the acini and also many alveoli and production of colloid on other parts.

tumours of the thyroid is that of Wegelin, which is based on that of Langhans

- (1) *Metastasizing malignant adenoma*—(a) The small cell adenoma (b) The large-cell adenoma
- (2) *The proliferating goitre of Langhans*
- (3) *The papillary epithelial tumours*
- (4) *The true thyroid cancers*—(a) Carcinoma solidum
- (b) the sarcoma form, (1) the medullary form, and (2) the cylindrical-cell carcinoma
- (c) Squamous-cell epithelioma

Formerly all these malignant tumours were grouped together on account of their sinister reputation, and even to day this view is held by many surgeons. It has been shown recently however by de Quervain and others that with a combination of operation and deep X ray therapy some remarkable results can be obtained in epithelial tumours.

METASTASIS IN BONE

There is one type of malignant goitre which does not easily go into this general classification, and it is of great interest to surgical pathologists. In the last few years I have seen two patients each with large bone tumours, which on section gave the histological picture of a nodular goitre. When the goitre was removed only adenomatous changes were found, and nothing to suggest malignancy. This is, of course, not an original observation. Cohnheim in 1876 published an autopsy case and thereafter quite a number of further cases were recorded, though in many of them a really adequate examination of the thyroid gland was not made.

In dealing with these cases most surgeons content themselves with either removing the metastatic tumour or irradiating it without removing the thyroid. This attitude, which may have been justified in some metastatic tumours, should now be modified because it is certainly possible by the combination of operation and radiation to considerably prolong the lives of these patients. As an illustration of this, a short account of the two patients just mentioned is appended.

A woman aged 61, was admitted to my clinic on 4th. 1933. Her story, which extended over ten

years, was as follows. She complained of slowly right-sided headaches accompanied by giddiness, frequent vomiting. Later a tumour developed in the parietal bone which steadily increased in size, became increasingly nervous and was troubled audibly bruit in the tumour; there was a medium-sized goitre to which she paid little attention because they are so common in Bavaria. Over the right parietal bone a fixed pulsating tumour the size of a tangerine, the skin over it was blue, and pulsation could be heard and felt. It was slightly diminished by compression of the artery. Pressure on the tumour produced no at its edge a distinct bony wall could be felt. There were no signs of intracranial pressure, cranial nerves were involved. The knee and ankle jerks were increased on left side.

In the neck was an ordinary rather hard goitre, lobe about the size of a fist, the left a little larger than right. There were no signs of malignancy or of adjacent structures. There was a slight increase in the pulse rate (102) and some cardiac dilatation. Radiography showed a circular defect of the left parietal

To sum up, here was an elderly woman with a very common type of goitre, who had a growing, pulsating tumour of the skull which caused a slight headache and giddiness. A secondary tumour was the most probable diagnosis. The patient's general condition was good, and so any particular risk she was operated on, using a local anæsthetic after a preliminary injection of Eucodal and scopolamine. When the tumour was exposed it looked just like an ordinary vascular goitre, and was removed together with a wide margin of normal bone and the underlying dura which was also involved. When the dura was partly raised the anterior aspect of the cerebral sulcus was also seen to be invaded and a thin layer of brain was resected with diathermy loop.

The patient recovered comparatively quickly. There was a post-operative paresis of the left arm and leg, but in a month this was so far recovered that she could use her left hand to perform simple movements. One month later a symmetrical goitre was almost completely removed, a very small amount of unchanged thyroid tissue being left on the right side. She recovered uneventfully from the goitre operation and was soon walking about the clinic.

FIG 2b—The goitre gives the same picture of small alveoli without definite lumina, and zones in which alveoli were more adult and contain masses of colloid.

training her partially paralysed arm and leg, and having intensive deep X ray therapy. Eleven weeks after the first operation she left the clinic and was able to do her ordinary housework.

Here then is a case interesting enough from a technical point of view, the sort of thing that any surgeon likes to do and report, but the major and real interest lies in the pathological examination of

these two tumours. The secondary skull tumour both grossly and histologically was just like an ordinary nodular goitre adenomatous areas without colloid alveolar areas containing colloid secretion. The thyroid itself was examined with great care but serial sections failed to show any signs of malignancy. Many parts exactly resembled the skull tumour.



FIG 3—Destruction of the ischium by metastasising malignant adenoma of the thyroid

The stroma showed marked and extensive hyaline degeneration and some of these degenerated areas were calcified (Figs 2a and 2b).

In June 1934 nine months later she returned complaining of pain in the back. There was tenderness of the fifth lumbar area; radiography however was negative. The pain was very severe and as it was presumably due to a metastasis she was given deep X-ray therapy. After three weeks of this the pain had gone. She came back again in March, 1936, nearly two years later with violent pain in the right lower limb, especially severe round the hip. This time a radiogram showed widespread destruction of the ischium and a secondary in the second lumbar vertebra (Fig 3). She was again given intensive irradiation and since then has been well and able to do her work.

This case illustrates the typical course of such a malignant adenoma showing its nature only by a very slowly developing secondary deposit in the skull, without signs of malignancy in the primary growth itself, and what was left behind of the thyroid showed no change in spite of the growth of further secondary deposits months later—and with it all, the patient can do her work.

I have had another similar case.

A man aged 41 came in September 1936 complaining of pain in the left leg for three years and subsequently his right leg became painful. For the last three years there had been a slowly growing painless tumour over the sternum and about a year previously a goitre had been removed in another hospital. During the war he was said to have had tuberculosis but had recovered.

On examination he was a strong man with no signs of disease except those I am about to describe. Over the manubrium sterni at the level of the left sternoclavicular joint there was a tumour the size of an apricot situated in and expanding the bone which pulsed and a systolic murmur was audible. In the upper lobe of the left lung there was dullness, and on auscultation sibilant and coarse rhonchi. There was tenderness on palpation over the third, fourth and fifth lumbar vertebrae; movement was limited and the muscles were rigid. Pressure on the head produced intense pain in the back. Both ankle jerks were absent and knee jerks diminished and there was hyperreflexia on the external a part of the dorsum of the foot (second sacral) and a perianal anaesthesia.

X-ray films of the lumbar spine showed a large area of bone destruction in the body of the fourth lumbar. It

will be seen that only a thin shell of bone remained (Fig 4).

This clinical picture is as you see very characteristic of malignant goitre: only the absence of recurrence in the neck was against it. I found out that it was a large adenomatous goitre which had compressed the trachea and on this account was removed. Microscopic examination was done by a distinguished pathologist Prof Oberndorfer now in Istanbul who found no sign of malignancy in many sections.

Fig 5 shows a section of such a goitre. Most of the acini are compressed so that the lumen is obliterated and many parts are without colloid; there is no penetration of the basement membrane and no invasion of the vessels. Further to elucidate this case a piece of tissue was removed with a diathermy loop. It was a vascular goitre like tumour and so on microscopic examination proved to be a colloid adenoma with colloid filled acini (Fig 6). The stroma showed hyaline degeneration and there was a thick strong capsule.

After intensive irradiation the chest tumour diminished rapidly; three weeks later it was below the level of the sternum. The symptoms of compression of the cauda equina were relieved by extension, but in order to prevent collapse of the vertebral body an Albee operation was done on Oct. 14th, 1936, a solid bone-graft from the tibia being used. Three weeks later the spinal metastasis was irradiated with the expected result that the pain disappeared. The reflex and sensory changes remained unaffected. Four weeks after the Albee operation he was walking with a light spinal brace and in six weeks he left the hospital.

This second case has some interesting points of difference from the first. The patient was a comparatively young man who four years ago had an ordinary nodular goitre removed but a year later began to have sciatia which despite treatment slowly increased until it was so obvious that his cord was compressed. Again one year after the pains began he had developed a tumour in the chest and this localisation suggested a primary thyroid growth which was confirmed by biopsy. Intensive irradiation and spinal fixation relieved the symptoms. I think that before long he will have a further recurrence not only on account of his youth but because the tumour seems very malignant.



FIG 4—Irreversible destruction of the body of the 4th lumbar vertebra by metastasising malignant adenoma of the thyroid

TWO TYPES OF MALIGNANT ADENOMA

Reference to the classification above shows that there are two types of malignant adenoma which are both extremely rare. These two cases just

described belong to the small cell type, the large-cell type is even rarer still. Under the microscope their appearance is surprisingly uniform. Langerhans, when he was describing them, said "When you have seen one field you have seen the lot", the cells are strikingly large and their protoplasm richly granular.

To look at they are very much like the suprarenal gland and have characteristic small alveoli, appearing as isolated knobs in the middle of the goitre. Getzow, who is the continental authority on the subject, believes that they arise from tissue rests of the branchial arch, which give rise to tumours having a syncytial character. Groups of cells having these characters, but without tumour-formation, are often found in the normal thyroid gland. This view is however disputed by other authorities.

When they grow they form a hard, isolated tumour either in a normal gland or in nodular thyroid. Later they become fixed and infiltrate widely so that they are often mistaken for an inflammatory condition. Their prognosis is relatively good because, if they are removed with the capsule, they are usually cured, especially if they are irradiated afterwards. I myself have not seen a case and reports of them are rare.

In this rare type and also in the ordinary malignant thyroid the onset of malignancy produces quite definite physical signs. The tumour increases in size and produces symptoms of pressure on the trachea and œsophagus, such as dyspnoea and dysphagia. The patient goes rapidly downhill as the tumour increases in size and fixity. Contrast this with the cases I first described, a perfectly ordinary adenoma with a long history, a solitary, equally slow growing tumour in a bone, the two apparently unconnected until someone explores the bone tumour and finds that histologically it is identical with a colloid goitre.

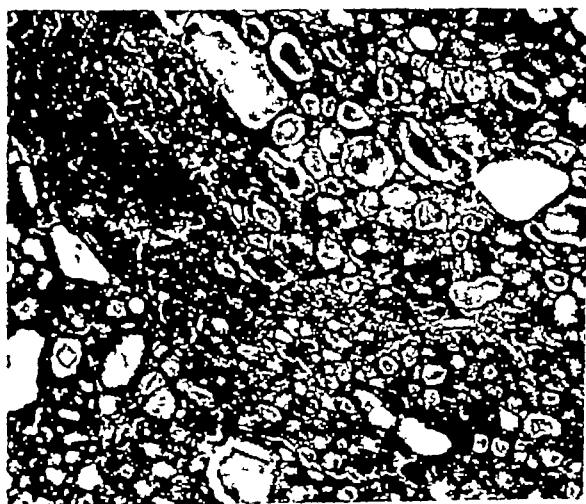


FIG 5—A picture of adenomatous and colloid goitre

If the surgeon is enterprising enough to remove the goitre, not a trace of malignancy is found. What explanation is there for this? If one considers the nodular goitre to be a true adenoma, it must be logically admitted that here we are dealing with a malignant adenoma. But if this view be entertained, it must not be confused with the precancerous conditions which we find in the breast and rectum, described in this country by Cheate and Dukes.

If these adenomata undergo malignant degeneration they themselves have the characteristics of a true carcinoma and their metastases are histologically malignant.

There is however another explanation advanced by Ribbert, who suggests that the entry of goitrous

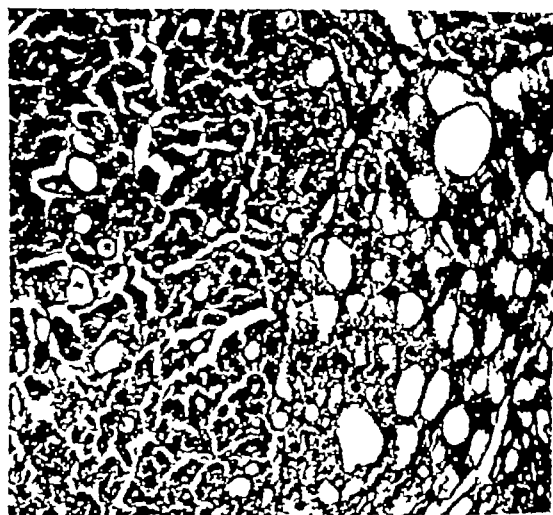


FIG 6—The metastasis is the exact copy of the goitre

tissue into the veins is, so to speak, in the nature of an accident, it is the result of pressure atrophy and not true active infiltration. Hence the rarity of the condition. Graham, discussing thyroid malignancy, believes that invasion of the blood-vessels is the true criterion of malignancy.

Schworer has made an attempt to prove that trauma is mostly the cause of this invasion of the vascular system. He points out that many cases of metastasis appear after an operation for goitre. My second case would perhaps support this idea.

Dunhill has emphasised an important fact in connexion with malignant disease of the thyroid. He has shown that such changes only take place after a long period, much longer than in other types of carcinoma, often 30-40 years. In this type of "malignant adenoma" the history extends from 5-10 years—a marked contrast with the true carcinomata. The metastases often occasion curious mistakes in diagnosis, they may, by their pulsation, resemble an aortic aneurysm, and histological diagnosis may be difficult and inadequate on account of the hæmorrhage caused by excision of a small piece. This however is the only way in which the diagnosis can be made.

Finally I want to make another distinction between these malignant adenomata and true cancer of the thyroid, this concerns their prognosis and reaction to treatment. Von Eiselsberg, a master surgeon with an unrivalled experience, gives it as his opinion that in every case of malignant goitre the metastasis should be irradiated and the gland either removed and irradiated or if this is impossible simply irradiated. This, I think, represents the general opinion to day.

Now with true cancer of the thyroid cures are by no means uncommon. I myself in 1926 was able to show 11 cases free from recurrence after more than six years. In one of these a segment of the trachea had been removed, another patient who had a total thyroidectomy is alive and well eleven years later but has to take thyroid extract daily. But I do not

think you will find any cases of malignant adenoma which can really be called cured their lives can be prolonged and their comfort increased by operation and irradiation but they cannot be cured.

In sarcoma of the thyroid the course is still more rapid. Six to nine months is the limit and they are unaffected by either operation irradiation or a combination of these two so we must come to the reluctant conclusion that excluding sarcoma malignant adenoma is in spite of its initial response to treatment and its slow course in fact the most sinister of all thyroid tumours.

SULPHÆMOGLOBINÆMIA AND METHÆMOGLOBINÆMIA FOLLOWING ADMINISTRATION OF p AMINO BENZENESULPHONAMIDE

By J P J PATON M.B. Class

RESIDENT MEDICAL OFFICER, BELVIDERE ISOLATION
HOSPITAL, GLASGOW AND

JAMES C EATON B.Sc. M.B. Class A.I.C.

BIOCHEMIST AND ASSISTANT PHYSICIAN FOR METABOLIC DISEASES
THE VICTORIA INFIRMARY OF GLASGOW

A SEVERE toxic effect resulting from one of the p aminobenzenesulphonamide drugs (Protosil Album) recently came under the observation of one of us (J P J P).

It has been suggested that poisoning from this substance is associated with administration of sulphates (Colebrook and Kenny 1936 Diccombe 1937). Ten cases of cyanosis following administration of p aminobenzenesulphonamide (hereafter referred to as sulphanilamide for brevity) have been proved to be associated with sulphæmoglobinæmia (Colebrook and Kenny 3 Diccombe 6, Frost 1). Of these 8 received magnesium sulphate by mouth and 1 had a dressing of sodium sulphate. We have investigated this and 10 other cases treated with sulphanilamide with or without magnesium sulphate administration to determine whether sulphates are actually concerned in the toxic effects of these drugs. Of our cases 4 developed sulphæmoglobinæmia of which 3 had had sulphates before admission. Four patients who received no sulphates developed methæmoglobinæmia. This condition has not previously been recorded after sulphanilamide.

A CASE RECORD

The history of the original case is as follows.

CASE 1—Female aged 28. Gave birth to a child on Feb. 23rd 1937 after long rotation from an occipito posterior position and application of forceps. The puerperium was uneventful from then until March 15th when she developed pain in the left breast. From March 7th until admission she received 0.3 gramme protosil album every two hours apart from the night hours—i.e. 2.4 g. per diem total dosage 9.6 g.—and from March 8th till 11th inclusive she had 1 to 2 teaspoonfuls of magnesium sulphate in the morning. On the 8th the breast was incised and pus evacuated. A dressing was applied the nature of which is unknown but which may have contained magnesium sulphate.

The patient was admitted on March 11th as a case of puerperal pyrexia with an alarming degree of cyanosis and apparently moribund. The temperature was 99.8° F. the pulse rate 116 per minute and the respiration rate 22. Cyanosis was particularly conspicuous in the face lips and finger nails. Pulse volume was very poor. Cardiac dullness was slightly increased to right and left. Heart sound was pure but of poor quality. For two days after

admission there were some fine râles at the base of the right lung and the percussion note over this area was slightly impaired. There was slight tenderness in the lower abdomen. The urine was dark, contained a trace of albumin pus and B. coli, and reduced Fehling's solution. Rothera's test was positive. No hydrogen sulphide could be detected. There was a deposit of pink urates.

Treatment was begun at once with administration of oxygen through a Haldane's mask but without apparent effect on the cyanosis. A pint of saline and 5 per cent glucose was given intravenously at 4 P.M. on March 11th after which the cyanosis diminished and the pulse improved. By 3 A.M. on the 12th the cyanosis was again more obvious and the pulse poor. Half a pint of unusually dark blood was withdrawn from a vein and one pint of citrated blood transfused. This caused a definite diminution in the cyanosis. By 10 A.M. the patient's condition had much improved. Potassium citrate rectal saline and glucose were given freely and oxygen for 20 minutes every four hours. On examination of the urine Rothera's test was now negative but there was still a reduction of Fehling's solution. A sample of blood withdrawn from the median basilic vein had a peculiar dusky brown colour.

The administration of oxygen was continued as above until March 16th by which time the cyanosis was much less marked though still distinct. Cyanosis was still apparent clinically though in progressively diminishing degree until the 18th after which it was not possible to say with certainty that it was present. Smears from the breast showed *Staphylococcus aureus*. A cervical smear showed anaerobic streptococci. On March 11th transillumination of the lobe of the ear and spectroscopic examination showed a well marked band in the red part of the spectrum. A sample of venous blood was examined spectroscopically on this date and showed a very well marked spectrum of sulphæmoglobin. Spectroscopic examination of the blood was made daily until March 30th and then on alternate days until April 26th—i.e. until 40 days after stopping administration of protosil album—but the characteristic band of sulphæmoglobin in the red part of the spectrum was still faintly visible. The sulphæmoglobin was entirely intracorporeal. The patient made a perfect recovery.

The findings for the other cases are shown in the accompanying Table. All the patients were females in the puerperium except Case 13 (who was a child with streptococcal interlobar emphysema) and were diagnosed as puerperal fever or septic abortion. Cases 6 and 12 being complicated by bilateral mastitis and plegmæmia alba dolens respectively.

Sulphæmoglobinæmia associated with giving sulphur or its compounds has been noted after drugs other than sulphanilamide. Van den Bergh and Revers (1931) recorded sulphæmoglobinæmia in a patient following treatment with Iridium (phenylazo α^1 dlamino pyridine) and showed that this was associated with administration of sulphates. Hartup and Waterfield (1930) found sulphæmoglobinæmia after acetphenetidine (this is discussed more fully below). By means of *in vitro* experiments van den Bergh and Revers showed that pyridium accelerates formation of sulphæmoglobin by hydrogen sulphide. This property of catalysing sulphæmoglobin formation is apparently shared by a large variety of substances most of which are amino compounds or derivatives of amino compounds (van den Bergh and Weinga 1925). We have repeated and confirmed these *in vitro* experiments with pyridium and have made similar experiments with sulphanilamide. From our observations however no appreciable acceleration of the formation of sulphæmoglobin could be detected by the simple method used on the addition of sulphanilamide to the mixture of oxyhaemoglobin and hydrogen sulphide.

EXPERIMENTAL

Spectroscopic examination of the patient's blood was performed by means of a Leitz microspectroscope. The

SUMMARY OF THE FINDINGS

Case	Age	Dose of mag sulph (by mouth)	Dose of sulphanilamide reckoned from day of admission	Spectrum of blood	Remarks
GROUP 1					
2	26	5 ml during 5 days preceding admission	2nd day at 6 A.M., 6 g at 10 A.M., 6 g Total dose 12 g	2nd day at 1 P.M. SHb present Detectable till 23rd day	2nd day cyanosis marked Detectable till 20th day
3	27	3i daily for 4 days preceding admission	1st day 40 ml Pronto-soluble (Bayer) intramuscularly 2nd day 24 g sulphanilamide by mouth	3rd day SHb present Still detectable on 43rd day	3rd day cyanosis marked 50 ml. 1 per cent methylene blue intravenously failed to relieve cyanosis or sulphæmoglobinæmia Cyanosis detectable till 17th day
4	31	Nil	Variable 33rd-48th days Total 108 g in 16 days Average 6.75 g per day	Trace of SHb on 48th day Detectable till 66th day	48th day very slight cyanosis following dose of 24 g sulphanilamide on 46th day Marked secondary anemia
GROUP 2					
5-11		Nil	12 g daily for periods from 6 to 22 days Total dose 72 to 264 g	Normal	No cyanosis
12	20	3i just before admission	12 g daily 4th-25th days Total dose 264 g	"	"
13	3	Nil	3 g daily for 19 days	"	"
14	32	"	2nd day 12 g 3rd day 24 g 4th day nil 5th & 6th days 12 g each Total dose 60 g	"	4th day cyanosed Much diminished on 5th day Bronchitis
15	25	"	2nd-13th days 12 g daily Total 144 g	"	13th and 14th days slight cyanosis
16	31	3i daily for 3 days before admission	12 g daily 2nd-10th days Total 108 g	"	No cyanosis
GROUP 3					
17	42	Nil	1st day 8 g 2nd day 12 g 3rd day 36 g 4th day 24 g 5th day 6 g Total 86 g	6th day MHb present 6th day normal	6th day cyanosis marked, mental confusion 6th day slight cyanosis 4th day no cyanosis mentally normal 5 grains quinine hydrochloric t.i.d
18	30	"	2nd day 24 g 3rd day nil 4th day 24 g Total 48 g	7th day MHb present 8th day normal	3rd day cyanosed 4th day no cyanosis 5th-8th days slight cyanosis
19	30	"	1st day 4 g 6th-9th days 12 g daily Total 52 g	10th day MHb present 11th day normal	3rd day cyanosed 4th-8th days no cyanosis 9th day cyanosis marked Received hydrochloric acid
20	24	"	3rd day 12 g 4th day 8 g Total 20 g	4th day MHb present 5th day normal	4th day cyanosed 5th day no cyanosis Received hydrochloric acid

SHb = sulphæmoglobin

MHb = methæmoglobin

spectra were compared with that of a known solution of methæmoglobin in the comparison tube and the alpha band of the sulphæmoglobin shown to persist after addition of ammonium hydroxide, sodium cyanide, or ammonium sulphide to the blood (Wood Clark and Hurlley 1907, Harrop and Waterfield 1930). Blood from a finger prick was used, and was laked with a few millilitres of water. The alpha band was seen to lie between 6150 and 6280 Angström units and could be readily distinguished in position from that of methæmoglobin.

To determine whether sulphanilamide would accelerate sulphæmoglobin formation, 2 ml oxyhæmoglobin solution were placed in each of two test tubes. To one tube 5 drops of a solution of sulphanilamide in water, saturated at room temperature, were added and then a few drops of hydrogen sulphide solution to each of the tubes. One of the preparations was then placed on the microscope stage, the other being placed in the comparison tube of the spectroscop. In this way the spectra of the two samples could be watched simultaneously and the development of the spectra of sulphæmoglobin observed. The greater the quantity of H₂S added to the oxyhæmoglobin the more rapidly did the spectrum of sulphæmoglobin appear, but even using minimal quantities of H₂S sulphæmoglobin did not appear to be formed more rapidly in the sample containing sulphanilamide. The action of pyridium was observed similarly, adding a 0.25 per cent solution of this substance in water in place of sulphanilamide. In this case the spectrum of sulphæmoglobin appeared in a few seconds compared with several minutes for the sample without pyridium.

DISCUSSION

The 20 cases fall into three groups.

Group 1 comprises Cases 1 to 4. These patients all developed sulphæmoglobinæmia. In Cases 1 to 3 magnesium sulphate had been given, there was marked cyanosis (in Case 1 very extreme) and the spectrum of sulphæmoglobin in the blood was pronounced. In Case 4, where no sulphates were given, cyanosis was slight and the sulphæmoglobinæmia only just detectable.

Group 2 comprises Cases 5 to 16. In none of these was any abnormality found on spectroscopic examination of the blood and only in two (Cases 14 and 15) was any cyanosis seen. Of these 12 patients only 2 had received sulphates, and in one of these the administration of sulphates was stopped three days before giving sulphanilamide. Case 16 received sulphates until the day before giving sulphanilamide but failed to develop sulphæmoglobinæmia.

Group 3 comprises Cases 17 to 20. These patients became cyanosed though none had had sulphates. On examination of the blood it was found that methæmoglobin and not sulphæmoglobin was present. Comparing Groups 1 and 2, it is seen that while the patients in Group 2 received large doses of sulphanilamide for a long period without developing sulphæmoglobinæmia, those in Group 1 (Case 4

excepted) received much smaller total doses and rapidly developed sulphamoglobinæmia. This was particularly noticeable in Case 2 where only seven hours after giving the first dose of sulphanilamide the patient was markedly cyanosed and the blood contained sulphamoglobin. A possible explanation of the appearance of sulphamoglobin in Case 4 although no sulphates had been given is that intestinal stasis allowed reduction of other sulphur-containing substances in the bowel as is supposed to occur in enterogenous cyanosis and that these permitted sulphamoglobin formation in a similar fashion to exogenous sulphates. This is supported by the findings of Harrop and Waterfield mentioned below.

The formation of methamoglobin in Cases 17 to 20 was quite unexpected. As is well known drugs containing the sulphone group $-SO_2-$ such as Sulphonal and Trional produce methamoglobinæmia in susceptible persons and probably in anyone provided the dose is sufficiently great. Harrop and Waterfield (1930) have shown that while various aromatic organic compounds produce methamoglobinæmia if these substances are given along with sulphur the result is sulphamoglobinæmia. Apparently methamoglobinæmia is the true toxic result of a large dose of sulphanilamide or possibly of quite a moderate dose in an unusually susceptible person. Formation of sulphamoglobin takes place only when sulphur compounds are available as happens when they are present in the bowel in unusually large amounts.

We are unable to offer an explanation of the appearance of methamoglobinæmia in Group 3 where the dosage of sulphanilamide was, on the whole less than in Group 2. One of the patients had had quinine. Plasmoquine has been responsible for methamoglobinæmia but we are not aware of any such effect following administration of quinine despite its very wide use in the tropics. Nevertheless we have tried to eliminate this as a causative factor by giving Case 17 large doses of quinine without simultaneous administration of sulphanilamide. This did not result in a recurrence of the methamoglobinæmia. Two of the patients received hydrochloric acid for the purpose of aiding absorption (Foulls and Barr 1937). It may be that these patients received a greater effective dose. For the other cases, we are forced to that confession of ignorance—idiosyncrasy on the part of the patient.

The relative persistence of sulphamoglobinæmia and methamoglobinæmia is of some interest. While sulphamoglobin could be detected for more than six weeks after stopping administration of sulphanilamide methamoglobin could not be detected after 24 hours. This corresponded approximately with the cyanosis. When cyanosis was due to methamoglobin it disappeared very rapidly while that due to sulphamoglobin was much more persistent. These findings correspond with those of Waterfield (1928) in a patient in whom sulphamoglobin and methamoglobin were found alternately. Waterfield noticed that attacks of cyanosis associated with methamoglobin were transient the patient's colour rapidly becoming normal in the intervals with sulphamoglobin the cyanosis was persistent.

The persistence of sulphamoglobin is the more surprising on consideration of its mode of formation. Methamoglobin is the result of oxidation of the iron-containing part of haemoglobin but sulphamoglobin is believed to be an addition product. Carbon monoxide haemoglobin is also an addition compound of haemoglobin and is decomposed by oxygen so that in poisoning by carbon monoxide a few hours suffices

to remove it from the blood (Sollmann's Pharmacology 5th ed. p. 782). The persistence of sulphamoglobin in these patients implies that this substance cannot be so decomposed and that the HS cannot be excreted from the lungs. Probably the sulphamoglobin must be eliminated by the liver. Since methamoglobin disappears so much more rapidly it is unlikely that it is removed in similar fashion. Owing to its nature removal could scarcely occur in the lungs and it would seem not improbable that it can be reduced again to haemoglobin. If however this is correct it is difficult to understand why oxygen should appear to relieve cyanosis in patients who have methamoglobinæmia.

The detection of sulphamoglobin in the blood of the affected patients long after the disappearance of clinical signs of cyanosis points to the spectroscopist as being a much more delicate means of detecting poisoning from this group of drugs than the clinical observation of cyanosis.

CLINICAL AND THERAPEUTIC NOTES

In 3 of the patients (Nos. 1 to 3) the cyanosis was alarming but all recovered. The impression gained from these cases is that although the cyanosis appears serious danger to life is not great. Of the cases already reported which became cyanosed after the use of sulphanilamide or its derivatives only one (Frost 1937) has ended fatally. Though magnesium sulphate was not given to the patient during administration of the drug in Frost's case it is not stated whether the patient had had sulphates before coming under observation.

Further symptoms noted in our cases were nausea, headache and discomfort in the upper abdomen. In Case 17 where there was methamoglobinæmia mental confusion was a conspicuous symptom but it disappeared on stopping administration of sulphanilamide. Mental symptoms were a marked feature of Waterfield's case.

The treatment for alleviation of the symptoms depends on whether sulphamoglobinæmia or methamoglobinæmia is present. In the former case oxygen has little effect (as might be expected) but intravenous administration of saline and glucose relieves the cyanosis temporarily at least. If the patient's life appears to be in danger transfusion is indicated. If there is methamoglobinæmia oxygen appears to be of value. The cyanosis accompanying methamoglobinæmia disappears rapidly.

Before giving sulphanilamide a careful inquiry should be made to find whether magnesium sulphate or preparations containing it have been used owing to the common use of this substance to stop lactation.

SUMMARY

1 Administration of magnesium sulphate simultaneously with or within two or three days preceding administration of sulphanilamide gives rise in most persons to sulphamoglobinæmia. The formation of sulphamoglobin takes place very rapidly even after small doses of the drug.

2 In the absence of sulphates large doses of the drug are well tolerated but in a considerable proportion of persons doses of 1 to 24 grammes per diem result in methamoglobinæmia. Some patients may have an increased susceptibility to the drug.

3 The removal of sulphamoglobin from the blood is much slower than removal of methamoglobin. The former has been detected six weeks after administration of sulphanilamide ceased. The latter disappears in approximately 24 hours.

4 Spectroscopic examination of the blood is a more delicate means of detecting sulphæmoglobinæmia than clinical observation of cyanosis

5 Oxygen is of little value in treatment of severe cases of sulphæmoglobinæmia. If the patient's life is in danger blood transfusion is indicated. In methæmoglobinæmia oxygen appears to be of value

REFERENCES

- Colebrook L, and Kenny, M (1936) *Lancet* 1 1279
 Discombe G (1937) *Ibid*, March 13th p 626
 Foulis M A, and Barr J B (1937) *Brit med J* Feb 27th, p 445
 Frost, L D B (1937) *Lancet*, Feb 27th p 510
 Harrop G A, and Waterfield, R L (1930) *J Amer med Ass* 95 647
 Van den Bergh, A A H and Revers F E (1931) *Dtsch med Wschr* 57, 706
 — and Weiringa, H (1925) *J Physiol* 59, 407
 Waterfield R L (1928) *Guy's Hosp Rep* 78 265
 Wood, Clark T, and Hurlley W H (1907) *J Physiol* 36, 62

A CONTRIBUTION TO THE PATHOLOGY OF THE RHEUMATOID TYPE OF ARTHRITIS AND OF RHEUMATIC FEVER*

BY A G TIMBRELL FISHER, M.C., F.R.C.S. Eng

ORTHOPÆDIC SURGEON TO THE ST JOHN CLINIC AND INSTITUTE OF PHYSICAL MEDICINE LONDON AND TO THE LONDON COUNTY COUNCIL ARTHRITIC UNIT, ST STEPHEN'S HOSPITAL

ALTHOUGH, from time to time, contributions have been made to our knowledge of the pathology of the rheumatoid type of arthritis of unknown ætiology, (synonyms rheumatoid, chronic infective, atrophic, or proliferative arthritis), most of these have dealt with the later stages. The disease is rarely fatal per se and opportunities for post mortem examination in the acute or earlier periods are therefore rarely provided. Post mortem examination of patients who have succumbed to rheumatic fever is more often possible, but it is often observed that the joints of the heart is studied in detail and that the joints receive scant consideration. In the case of the rheumatoid type of arthritis, the classical pathological descriptions of Nichols and Richardson (1910) and of Strangeways (1918), and others, detailed as these are, are based to a large extent upon examination of material from the later stages of the disease. The pathological changes in such are complex since secondary degenerative or osteoarthritic changes are often superimposed, a theory of the cause of which will be put forward in this paper.

The work of Allison and Ghormley (1931) was based largely upon material obtained at operation upon joints affected with the rheumatoid and other types of arthritis at a somewhat earlier stage, and merits careful study. They drew particular attention to the "focal collections of lymphocytes" often observed in this disease and previously described by Hoffa and Wollenberg (1908) and by myself (1923), and claimed that these collections are a specific diagnostic feature.

A series of important papers has recently appeared from Klinge and Grzimek (1932). These authors are among those who maintain that rheumatic fever and arthritis of the rheumatoid and osteoarthritic types are different forms of the same underlying pathological process. It is my view that a principal cause of the confusion that exists concerning rheumatic

diseases is that we have neglected the Huntenan principle of basing our treatment upon a firm foundation of anatomical, physiological, and pathological knowledge. The present work is a sequel to former work on the pathology of the osteoarthritic and rheumatoid types of arthritis and upon joint physiology.

SOURCE OF MATERIAL AND SCOPE OF INVESTIGATION

My investigations have been carried out upon synovial tissues removed at operations during the last fifteen years upon patients suffering from the rheumatoid type of arthritis. These operations include the ordinary excisions and synovectomies in cases of long standing and, in addition, the newer method of lavage of the affected joints with normal saline or with antiseptic solutions combined with removal of portions of synovial membrane. The pathological changes in the articular cartilage and bone have also been studied, but as operative and post mortem material of this nature has only been obtained from the later stages which have been previously described by myself (1929) and others, these changes will not be described in this paper.

Arthrotomy and lavage is a valuable means of treatment in carefully selected earlier cases of the disease which have proved resistant to the usual medical and physical treatment, when the brunt of the disease falls mainly on one or both knees and when the articular surfaces are uninvolved or present early changes. It is of great value also in providing an opportunity for investigation of the joint tissues and fluids. It is a procedure which presents considerable advantages over mere aspiration, since the rheumatoid joint, even at a comparatively early stage, contains a variable amount of necrotic material due to fibrinoid degeneration of the synovial membrane and which it is impossible to remove through a needle or trocar, even when of large calibre. Many joints which give the sensation of fluctuation and which on clinical examination appear to be full of fluid, yield on aspiration but a moderate quantity, owing to the large amount of necrotic material present. It is for this reason that the operating arthroscope has proved disappointing in my experience. Occasionally, if conditions are favourable, arthroscopy enables a good view of the interior compartment of the knee joint to be obtained, but it possesses no special advantage over routine clinical and x-ray examination. The main drawback to the use of the

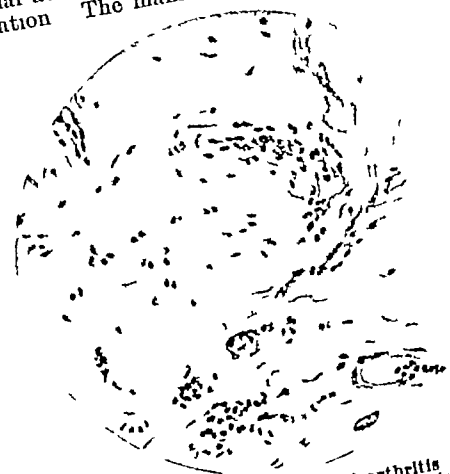


FIG 1 (Case 1)—Rheumatoid type of arthritis. Perivascular collections of cells in deeper layers of synovial membrane. (x 85)

* Based on a lecture delivered at the St John Clinic on Nov 13th, 1936

arthroscope lies in the fact that the masses of necrotic material to which reference has been made obstruct the view and cannot be completely removed through the cannula of the instrument even after frequent irrigation. In many patients the symptoms have completely disappeared after arthrotomy and lavage and they have remained cured for periods as long as 12 and 14 years and in the majority there has been a most gratifying amelioration of symptoms. This method of surgical treatment will be described in detail elsewhere.

Bacteriological examination.—The research into the aetiology of the rheumatoid type is being carried out by Dr Hardy Eagles of the Lister Institute. The purpose of this combined research has been to correlate the pathological findings with examination of joint fluids and synovial membrane removed at operation for evidence of a possible virus aetiology and to investigate the possibility of a pathological and aetiological relationship between acute rheumatic fever and the rheumatoid type of arthritis. After suitable manipulation of the specimens and high speed centrifugation Dr Eagles has obtained suspensions which are indistinguishable from elementary bodies demonstrable in similar suspensions.

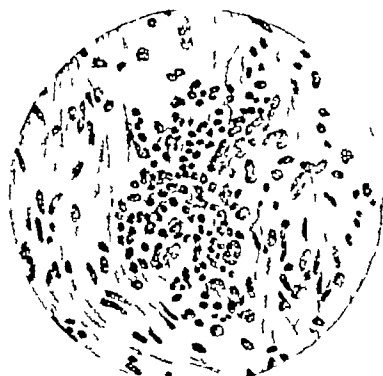


FIG. 3 (Case 1).—Rheumatoid type of arthritis. Section of synovial membrane ($\times 210$) showing small focal collections of cells under higher power showing giant cells of Aschoff type.

Barnard kindly provided material from autopsies for the investigation of the synovial changes in the arthritis occurring in the course of rheumatic fever.

EARLY RHEUMATOID ARTHRITIS

My first case is one of the rheumatoid type of arthritis of unknown aetiology.

For two years the patient an unmarried woman aged 38 had complained of pain and stiffness of both knees of moderate severity. She had also experienced occasional pain and stiffness of the neck. For two weeks before operation she had complained of severe pain stiffness and swelling of the right knee and difficulty in walking. No toxic focus could be discovered.

The right knee had a synovial effusion with painful limitation of flexion increased temperature over the joint and tenderness over the deep fibres of the internal lateral ligament. Radiographically the knee showed no osseous changes.

Operation.—Small incision on the inner aspect of the joint. Smears of synovial fluid taken. Small portions of the infrapatellar pad of fat were removed and the joint washed out with normal saline. No changes seen in the articular surfaces beyond very early pitting on the internal femoral condyle.

The sections of the synovial membrane from this case show proliferation of the synovial villi and of the specialised synovial cells lining the villi. There is degeneration of the superficial cells at one or two spots. In the deeper layers of the synovial membrane are several small focal collections of cells which are in the main perivascular (Fig. 1). The cells constituting the collections are lymphocytes and histiocytes and occasionally among these cells large histiocytes somewhat triangular in shape and resembling the giant cells seen in the Aschoff nodule of rheumatic fever can be recognised. In the region of these collection areas of focal hyaline degeneration of the connective tissue can occasionally be seen which often involve the adventitia of the blood vessels. Proliferation of the vascular endothelium is a prominent feature and in some cases the arteriole or capillary is completely blocked by endothelial proliferation. An important feature is the complete absence of the polymorphonuclear cell which is a feature in the forms of arthritis associated with the presence in the joint of pyogenic organisms. The bacteriological examination of the joint fluid and tissues was negative.



FIG. 2 (Case 2).—Rheumatoid type of arthritis. Section of synovial membrane ($\times 70$) showing large area of fibroid degeneration above and to the left and several focal collections of cells in the deeper layers.

from recognised virus diseases. Similar bodies have been found in the pericardial and pleural exudates and joint fluids from rheumatic fever. These suspensions have been examined for agglutination with rheumatic sera using the hanging drop technique. Tests have been carried out with material from rheumatism of the rheumatoid type and rheumatic fever. This aspect of the work will be described by Dr Eagles in a forthcoming publication.

It is proposed in this preliminary paper to describe shortly the *pathological aetiology* of the rheumatoid type of arthritis of non-specific or unknown aetiology and to compare the changes with those seen in the joints in rheumatic fever a few representative cases only having been selected for description.

Some of the rheumatoid group were private patients but the majority were patients at the L.C.C. Arthritis Unit, St Stephen's Hospital and the histological examination of the joint tissues removed from the latter was carried out at the Central Histological Laboratory of the London County Council. Prof. H. M. Turnbull and Dr. W. G.



FIG 4 (Case 3)—Rheumatic fever. Section of synovial membrane ($\times 120$). Above and to the left are several blood vessels showing fibrinoid degeneration of the sub intimal layer. Below and to the right are two Aschoff bodies with typical giant cells.

A LATER ACTIVE STAGE

The pathological histology of the rheumatoid type at a later, but still active, stage will now be described and comparison made with a case of rheumatic fever which shows many similar pathological features. In particular, attention is drawn to a peculiar form of degeneration of the connective tissues known as "fibrinoid" which has been observed in the lesions of rheumatic fever for many years, although its occurrence in the rheumatoid type has only been recently described by Klinge and Grzimek (1932). Perivascular collections of cells are seen, as before, but, in the cases to be described, giant cells of the Aschoff type are a prominent feature, not only in the case of rheumatic fever, but in the rheumatoid type of arthritis—a phenomenon which does not appear to have been described before in the latter disease.

In my second case of the rheumatoid type of arthritis the patient was a married woman aged 62.

Nine months before operation, painful swelling in the right ankle suddenly developed, followed two weeks later by similar symptoms in the right knee. She received electrical treatment for several weeks and the joints improved, but soon the left knee, the right wrist, and the metacarpophalangeal joints of the right index and second fingers became involved. All joints, except the left knee, responded to medical and physical treatment. No toxic focus could be discovered.

Operation.—Long parapatellar incision on inner side of left knee. The synovial membrane showed hypertrophy of the synovial fringes and was oedematous in places. Much fibrinoid material was present, not only in shreds in process of exfoliation from the synovial membrane, but free in the joint. Early pannus extended for a short distance over the lateral portions of the femoral condyles, but the articular surfaces were otherwise uninvolved. Synovectomy was performed and the joint irrigated with Dakin's solution. Bacteriological investigation of synovial tissues and fluid was negative. The infrapatellar pad of fat was chosen for microscopical examination.

Several large areas of fibrinoid degeneration (Fig 2) not only of the superficial area, but lying more deeply were clearly shown. At this stage of the disease it is usually to be noted that the synovial membrane is diffusely infiltrated with chronic inflammatory cells, principally lymphocytes, plasma

cells, and epithelioid histiocytes, in addition to the typical perivascular collections of cells previously described. In this type of case, giant-cells of the Aschoff type can usually be observed (Fig 3), if the smaller perivascular collections are examined, rather than the areas diffusely infiltrated with chronic inflammatory cells.

RHEUMATIC FEVER

The third illustrative case is one of rheumatic fever in a girl aged 9.

She was admitted to St Charles' Hospital a fortnight after the onset of illness with temperature and pain in right elbow which, however, ceased on admission. Pain and swelling of both ankles commenced three days before admission and the ankle joints were hot, swollen and painful. The temperature on admission was 99.8, the pulse rate 144, and respirations 26. The heart was not enlarged, but a mid diastolic mitral murmur was present.

Two weeks later, the patient became gravely ill with extreme restlessness and incontinence. The heart was now enlarged with canter rhythm and loud apical systolic bruit. The patient gradually sank and died. The post mortem examination by Dr Barnard revealed oedema of medulla, pons, mid brain, basal ganglia and parietal lobe of brain, rheumatic synovitis of sternoclavicular articulation, partially organised fibrinous pericarditis with Aschoff

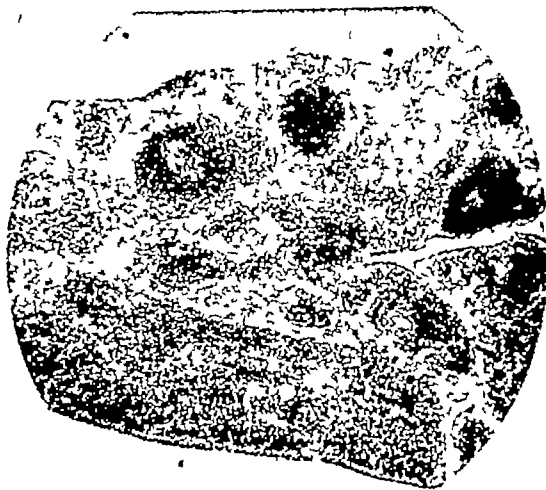


FIG 5 (Case 5)—Rheumatoid type of arthritis. Section of synovial membrane ($\times 113$). Showing several lymphadenoid nodules some of which have a clear central area.

nodes in myocardium, rheumatic mitral endocarditis, oedema of lung with fibrinous pleurisy and congestion of liver and kidneys.

Sections of the synovial membrane of the sternoclavicular joint (Fig 4) reveal many of the specific histological features of acute rheumatism that have so often been described in connexion with the heart. Fibrinoid degeneration is a prominent feature (a) of certain of the synovial villi and of the surface of the synovial membrane, (b) scattered diffusely throughout the synovial membrane, and (c) in connexion with the inner coats of many of the blood vessels so that the wall appears to be thickened. Many of the capillaries are blocked by proliferation of the endothelial layer. Around many of the blood vessels are collections of cells in connexion with the adventitia. These cells are mainly large and small lymphocytes and epithelioid histiocytes, with occasional plasma and mast cells. Among the histiocytes are some giant cells which have two, three, or even more nuclei. These collections of

cells resemble therefore the Aschoff bodies seen in the heart

FIBRINOID DEGENERATION

Fibrinoid degeneration was apparently first described by Neumann in 1880 and again in 1896. In the latter paper he states that it is a substance which at first sight has the appearance of fibrin but which is in reality a form of degeneration of the connective tissue. It is usually stained a diffuse blue by the Weigert-Gram stain and is, like fibrin stained a deep blue by Mallory's phosphotungstic acid haematoxylin and red by Mallory's acid fuchsin aniline-blue. Klinge and Grammek (1932) state that it gives the fibrin staining reactions for the most part.

With Klinge I maintain that the fibrinoid degeneration of the synovial membrane here described is an important feature of the rheumatoid type of arthritis of so called unknown aetiology and that this form of degeneration is not therefore confined to acute rheumatism. In the latter condition it is seen not only in the synovial membrane but in the heart and in other regions affected by the disease. The degeneration affects principally the collagenous connective-tissue bundles and forms a striking histological picture. Dawson (1933) states that with Masson's trichrome stain it presents a fibrillar structure which stains a brilliant red in striking contrast to the vivid green of the normal collagen. My investigations show that this form of degeneration is therefore a characteristic feature of the rheumatoid type of arthritis of unknown aetiology except in the very early and in the more chronic stages.

OEDEMA OF THE SYNOVIAL MEMBRANE IN RHEUMATOID ARTHRITIS

Another interesting and important feature which appears to have hitherto escaped general notice is that at operation the synovial membrane can often be seen to be oedematous. This is well shown in the following case (No 4) which presents also other interesting features.

The patient a married woman aged 60 had complained of pain and swelling in the right knee for ten years of gradual onset. For the last three years, she has only been able to walk with two sticks and has gradually become worse. For eleven years, both wrists and hands have been painful stiff, and swollen. Has had eight children with

no miscarriages one had confinement with instruments and leucorrhoea for several years. Climacteric at age of 48. Bowels always constipated. All teeth removed eight years ago for severe pyorrhoea. Tonsils normal.

Operation.—Synovial membrane oedematous and general hypertrophy of synovial fringes. Synovectomy followed by irrigation of the joint with Dakin's solution. Some turbid free fluid present in the joint. Considerable destruction of the articular cartilage of the patella and condyles of the femur present with extensive pannus. The bacteriological investigation of the synovial fluid and fluid was negative.

Sections of the synovial membrane in this case show the chronic inflammatory infiltration with perivascular collection of cells and areas of fibrinoid degeneration to which attention has been already drawn. The sections of the synovial membrane show in addition the oedema which is often such a prominent feature in these cases. Near the surface of the synovial membrane are a large number of clear areas varying in size. These areas are surrounded by fibrinoid degeneration of the connective tissue and interspersed in this area are large numbers of giant cells which themselves often occupy spaces. These giant-cells vary in size some being of the typical Aschoff variety and having two or three nuclei while others have many nuclei and resemble foreign body giant cells. The giant-cells appear to be destroying the fibrinoid material, and many of the smaller spaces appear to be formed in this manner.

RHEUMATOID ARTHRITIS IN ITS LATER STAGES

The changes in the synovial membrane in more chronic cases of the rheumatoid type of arthritis of unknown aetiology constitute a very striking and in my opinion specific appearance and will now be described. They are illustrated in the following case (No 5) :—

Married woman aged 64. Onset of rheumatoid type of arthritis in right knee 2½ years ago during a time of mental and physical stress. No obvious toxic focus present but the majority of her teeth were removed shortly after the onset of the arthritis owing to pyorrhoea. Examination showed chronic arthritis of rheumatoid type of right knee—far advanced. Practically a flail joint and any attempt to flex the knee is accompanied by a sudden lateral displacement of a tibia with a painful jerk. Triple displacement of the tibia is present and there is ½ in wasting of the right thigh. Wassermann test negative. Arthritis of the rheumatoid type was also present in the metacarpophalangeal joints of both thumbs and in the proximal interphalangeal joints of both middle fingers. Owing to the gross destructive changes the joint was excised.

The sections of the synovial membrane from this case (Figs 5 and 6) demonstrate clearly the lymphadenoid nodules often with a clear centre that are such a conspicuous feature of this type of arthritis. The nodules are formed as follows: in the first place there is a perivascular collection of lymphocytes, histiocytes and plasma cells with an occasional Aschoff giant-cell as has been previously described. This is followed by proliferation of the vascular endothelium so that the clearer central area contains many cells of endothelial type interspersed with strands of fibrin (Fig 6). A close connexion of these lymphadenoid nodules with the blood vessels is clear on careful examination and seems to disprove the view of Allison and Ehrlicher that these nodules are not primarily perivascular. It has been suggested that the appearance of these nodules lends support to the tuberculous theory of origin of this form of arthritis. I cannot subscribe to this view as these



FIG 6 (Case 5)—Rheumatoid type of arthritis. Section of synovial membrane to show structure of central zone of a lymphadenoid nodule seen in Fig 5 ($\times 15$).

nodules never contain the characteristic tuberculous giant-cells and caseation is absent. The bacteriological investigation of the synovial tissues and fluid was negative.

In the later stages of the rheumatoid type, the synovial membrane and villi become fibrotic. Many of the blood-vessels are blocked, and, in some cases, there is a striking development of connective tissue around the vessels in the form of concentric rings (pericapillaritis diffusa of Shattock and Fisher (Fisher 1922-23)). As similar changes can be seen in the sub-articular blood vessels, it is clear that the nutrition of the articular cartilage and of the whole joint must be seriously impaired and this interference with the nutrition of the joint is probably the cause of the secondary osteoarthritic changes that so often supervene in the later stages of the rheumatoid type of arthritis. A large number of the specimens in the Strangeways collection at the Royal College of Surgeons of England demonstrate this fact very clearly.

There is evidence also that in some cases the arthritis of rheumatic fever, instead of disappearing, persists in a form indistinguishable from the rheumatoid type of arthritis and secondary osteoarthritic changes may eventually supervene.

COMMENTARY

The results obtained in the course of this investigation show that the pathological histology of the synovial tissues of uncomplicated forms of the rheumatoid type of arthritis of so called unknown ætiology and of acute rheumatism presents a similar and specific picture. The similarity of the pathological reactions in the synovial membrane in these clinical conditions supports the theory that they are manifestations of the same fundamental pathological process. Charcot (1881) wrote in this connexion "There are not two fundamentally distinct diseases but only two manifestations of one and the same diathetic state," and Hawthorne (1900) considered that the presence of similar subcutaneous nodules in the two diseases showed that they were intimately related. Of recent years, these subcutaneous nodules have been subjected to close pathological study by Coates and Coombs (1926), Freund (1928), Dawson (1933), Clawson and Wetherby (1932) and others, and it has been established that the pathological histology is identical in the two diseases. McEwen (1933) has studied by means of supravital stains the cells of the subcutaneous nodules of both rheumatic fever and rheumatoid arthritis and claims that the staining reactions of the cells in the two conditions are similar and differ from the cells in other granulomatous conditions such as syphilis and tuberculosis. He has found the same specific staining reactions in the cells of the synovial membrane in rheumatoid arthritis.

It is interesting to observe that the changes that have been described in the synovial membrane, both in acute rheumatism and in the rheumatoid type of arthritis in their early stages show a strong resemblance to the foci in the interstitial tissue of the myocardium in rheumatic fever first described by Poynton (1899) but further elaborated by Aschoff (1906), Carey Coombs (1911), and others. In this investigation, the pathological picture, the negative results of bacteriological examination of the joint tissues and fluid in uncomplicated cases, together with the absence of polymorphonuclear reaction in the synovial tissues—so characteristic of other forms of arthritis associated with the presence of pyogenic organisms—

is not in agreement with the hypothesis that the rheumatoid type of unknown ætiology is due to the actual presence in the joint itself of streptococci or other pyogenic organisms. It is a significant fact also that in a few cases in which streptococci were isolated from the synovial membrane, typical pyogenic membrane was observed, intensely infiltrated with polymorphonuclear cells, and it is important to note that definite toxic foci were present in these patients in contradistinction to the previous group. It would appear that in these cases secondary infection has been superimposed upon some other factor, the nature of which is still undecided. I am unable therefore, although some of my work is confirmatory of that of Klinge, to subscribe to his view that in uncomplicated forms of rheumatic disease the tissue changes are similar to those in septic diseases with a demonstrable exciting cause.

Are the peculiar and apparently specific histological changes that occur in uncomplicated rheumatic disease allergic phenomena associated with a focus of streptococcal infection? In this connexion it may be noted that Klinge has described similar changes in serum sickness. On the other hand, are they due to some other factor acting either alone or in conjunction with the streptococcus? The results of Schlesinger, Signy, and Amies (1935) tend to show that a virus might play some part in the ætiology of rheumatic fever. It would, however, be unwise to disregard the role of streptococci in rheumatic infection in view of accumulated evidence, and it is probable that both virus and streptococci are concerned in the ætiology. My research associate, Dr G. Hardy Eagles, will deal with these problems in a forthcoming paper.

In conclusion, I wish to express my indebtedness to Sir Frederick Menzies for kindly placing the resources of the London County Council hospital services at my disposal, to the Medical Research Council for financial assistance towards the expenses of the research, to Dr D. S. Sandiland, medical superintendent of St. Stephen's Hospital, Prof H. M. Turnbull, and Dr W. G. Barnard, chief histologist to the London County Council for much help, to Sir Leonard Hill and his other colleagues at the St. John Clinic and at the L.C.C. Arthritic Unit for their kind assistance.

REFERENCES

- Allison, N., and Ghormley, R. K. (1931) *Diagnosis in Joint Disease*, New York and London.
 Aschoff, L., and Tawara, S. (1906) *Brit. med. J.* 2, 1103.
 Charcot, J. M. (1881) *Clinical Lectures on Senile and Chronic Diseases*, New Sydenham Soc., London.
 Clawson, B. J., and Wetherby, M. (1932) *Amer. J. Path.* 8, 282.
 Coates, V., and Coombs, C. F. (1926) *Arch. Dis. Childh.* 1, 153.
 Coombs, C. (1910-11) *J. Path. Bact.* 15, 489.
 Dawson, M. H. (1933) *J. exp. Med.* 57, 845.
 Fisher, A. G. T. (1922-23) *Brit. J. Surg.* 10, 52.
 — (1923) *Brit. med. J.* 2, 102.
 — (1929) *Chronic (Non-Tuberculous) Arthritis*, London.
 Freund, E. (1928) *Wien. Arch. inn. Med.* 16, 73.
 Hawthorne, O. O. (1900) *Rheumatism Rheumatoid Arthritis, and Subcutaneous Nodules*, London.
 Hoffa, A., and Wollenberg, G. A. (1908) *Arthritis Deformans und sogenannter chronischer Gelenkrheumatismus*, Stuttgart.
 Klinge, F., and Grzimek, N. (1932) *Virchows Arch.* 284, 616, 286, 333 and 344.
 McEwen, C. (1933-34) *Amer. Heart J.* 9, 101.
 Neumann, E. (1888) *Arch. mikrosk. Anat.* 18, 130.
 — (1896) *Virchows Arch.* 144, 201.
 Nichols, E. H., and Richardson, F. L. (1909-10) *J. med. Res.* 21, 149.
 — (1910) *Arthritis Deformans*, Boston.
 Poynton, F. J., and Still, G. F. (1899) *Trans. path. Soc. Lond.* 50, 324.
 Schlesinger, B., Signy, A. G., and Amies, C. R. (1935) *Lancet* 1, 1145.
 Strangeways, T. S. P. (1919) *Trans. med. Soc. Lond.* 42, 19.
 — (1920) *Brit. med. J.* 1, 661.

ACQUIRED HÆMOLYTIC JAUNDICE

WITH UNUSUAL FEATURES

By E S DUTHIE M.B. Dubl. Ph.D.

ASSISTANT PATHOLOGIST, ROYAL HOSPITAL, SHEFFIELD AND
DEMONSTRATOR IN PATHOLOGY, SHEFFIELD UNIVERSITY

The following case observed continuously for nine months is recorded because unusual features in the blood picture made the diagnosis at first uncertain and because few similar cases have been described with autopsy findings.

CLINICAL RECORD

The patient a widow aged 70 was admitted to the Royal Hospital Sheffield, on Nov 15th 1935 with a history of breathlessness, palpitation, and pain in the legs and back for the past year. She also complained of a continuous nagging pain in the upper abdomen unrelated to food. About six months previously she had found that she was becoming pale and since then had been unable to do the housework. During the past three months she had had weekly injections of Campolon and had improved slightly the pain becoming less severe. She had always been pale but could remember no previous attack of anaemia nor was there any family history of it. She was slightly deaf.

Condition on admission.—She was a well built, well nourished woman with definite jaundice of the skin and sclera. She looked pale and ill and was very weak. Temperature 97.2° F pulse-rate 84; respirations, 20. Tongue clean and moist not atrophic. Mouth and fauces normal. Nails striated and brittle. Liver not enlarged. On percussion the spleen was found to be slightly enlarged but it was not palpable. The muscles over the left upper abdomen were somewhat rigid, and there was slight tenderness there. No enlargement of glands could be detected and the heart, lungs and nervous system were normal.

Laboratory investigations.—Blood examination showed:

Red cells	1,190,000	Polymorphs	70%
White cells	10,400	Lymphocytes	21.5%
Hæmoglobin	46	Mononuclears	2%
Colour-index	1.1	Eosinophils	0.5%
Hæmatocrit reading	83.4		
Reticulocytes	67		
Frølich's range	0.44-0.36		

Urine showed macro- and micro-cytosis. Almost two-thirds of the cells showed polychromasia and nucleated red cells were numerous. The van den Bergh reaction was indirect positive and the Wassermann reaction negative.

Several stools were examined and all were of normal consistence and failed to show blood by the benzidine test. The urine was dark brown and acid. The stomach juice was greatly reduced in quantity—not more than 50-60 c.c. being obtainable in three hours after histamine stimulation in the fasting state—but normal in composition. Radiography of the long bones showed nothing unusual. A leucocyte-tolerance test on Feb 7th 1936 showed an initial hypoglycaemia followed by a biphasic response resembling that found in von Gierke's disease but well within normal limits. It suggested that the glycogen had been mobilised with some difficulty. The fœterus index on Jan 8th 1936 was 10 units.

Clinical course.—The blood picture remained much the same for a month but the patient then began to improve. Campolon 2 c.c. daily was given from Dec. 18th 1935 onwards being supplemented by ferrous sulphate grains 3 t.i.d. until Feb 6th when Marmite alone was administered. The improvement continued until finally she was discharged on March 22nd 1936 with a hæmoglobin figure of 54 per cent and reticulocytes 8 per cent. Campolon was resumed before her discharge and she continued to receive campolon marmite and ferrous sulphate. She attended hospital once a fortnight for blood examinations the first made on March 31st showing a maximum of 60 per cent hæmoglobin and reticulocytes 8 per cent. She was not seen after this until April 27th when the hæmoglobin had fallen to 56 per cent and reticulocytes were 10 per cent. She said that she had been confined to bed by a recurrence of the pains in her legs and back.

The fall in hæmoglobin continued with a progressive rise in reticulocytes and she was advised to return to hospital but refused. On July 31st she was readmitted with the following blood picture—

Red cells	1,070,000	Polymorphs	9%
White cells	38,000	Lymphocytes	3%
Hb	25	Mononuclears	3%
Cl	1.7		
Reticulocytes	81%		

Price-Jones curve gave a mean corpuscular diameter of 155 with $v = 18.13\%$ and $s = 1.79$. The blood film showed polychromasia, macrocytes, microcytes and numerous normoblasts many with molliform distortion of the nucleus. Polymorphonuclears included many banded forms. No primitive cells. Indirect van den Bergh, 2 units.

She was again very pale and jaundiced and visibly distressed. Her mental condition was confused and she was at times comatose. The pulse rate was 90-100 and respirations 30. Temperature 99. Blood transfusions of 250 and 320 c.c. were given and she improved considerably her mental symptoms and respiratory distress disappearing. A further transfusion four days later was followed by an attack of dyspnoea but she recovered and remained well for six days, after which she again became extremely ill with a hæmoglobin value of 30 per cent. A further 250 c.c. of blood was given but she died next day.

POST MORTEM FINDINGS

Adipose tissue in fair amount everywhere. Heart enlarged (14 oz.). Musculature pale but no fatty striation. Aorta atherosclerotic with severe ulceration in abdominal portion. Lungs normal except for some oedema of the bases. Stomach and intestines normal. Liver enlarged (3 lb.) on section it had a mottled appearance due to areas of congestion. Microscopically the centres of the lobules were congested with haemoglobin in the central liver cells and iron pigment mainly at the periphery. Biliary tract normal.

Kidneys.—The left kidney was almost completely replaced by a large hydropneumothorax cyst. It was apparently of the floating type. The right showed a mild chronic nephritis with an iron-containing exudate (haemoglobin) in the tubules, and iron in the coils of the convoluted tubules. In the remaining substance of the left kidney iron was also present. The spleen was enlarged (1.5 oz.) and had numerous fibrous adhesions. The cut surface had a rich dark red pulp trabeculae and Malpighian corpuscles showed distinctly. A single small infarct was present on the left border. Microscopically the pulp was engorged with red cells the venous capillaries being moderately distended or collapsed. There was little iron pigment and only a moderate amount of haemoferritin; no fibrosis or increase of the reticulum. Erythroplasmacytosis common. Cells of the myeloid series not numerous. Malpighian bodies small. Many normoblasts and a few megaloblasts seen. No Gandy Gamma nodules.

Lymphatic system.—In the glands examined which were mainly thoracic and abdominal iron was found in moderate quantity in large macrophages lying in the sinuses. Considering the degree of blood destruction the quantity was not very great.

Marrow.—Rich red bone-marrow in the shafts of the humerus and femur but not in the tibia. Centre of the shafts occupied apparently by solid mass of dark red blood feeding at the periphery into a more organised and less darkly stained portion. On section the picture was very similar in both bones. Adipose tissue was almost absent being replaced by large collections of erythrocytes. In what appeared to be deeply congested capillaries and sinusoids. Here and there among the erythrocytes especially at the edge of the marrow were small active erythropoietic foci, or less often groups of myeloblasts. The walls of the sinusoids containing the erythrocytes were not clearly defined though with azan staining the cellular fibrils with cells could be determined apparently dividing the erythrocytes into groups. Megakaryocytes were numerous and evenly distributed. There were few nucleated red cells in these collections of erythrocytes whereas in other organs such as the liver and kidney nucleated red cells were usually conspicuous in the vessels. A similar lack of nucleated red cells was noted in the congested sinusoids of the spleen. It seems that even mechanism is at work which separates them out.

Ribs, vertebrae, and sternum showed similar pictures, except that the erythrocytes were fewer in proportion to the nucleated elements, and that they tended to be within well defined sinusoids and capillaries. Hemopoiesis was very active in these bones. Erythrophagocytes were fairly common. Megakaryocytes were numerous and well distributed.

No hæmopoietic foci were found outside the bones. The thyroid showed colloid changes with degeneration and calcification of the lower portion of the right lobe.

DISCUSSION

Fig 1 shows the hæmoglobin and erythrocyte and reticulocyte counts in the nine months before death. A fall in the reticulocytes was reflected in a rise in the first two, and vice versa. Since on the scale 5,000,000 red cells per c mm is equivalent to 100 per cent hæmoglobin, a rise in the colour index is indicated by the red blood cell curve lying below the hæmoglobin curve. Mean cell diameters measured by the method of Price Jones (1933) were on Dec 16th 7.25 μ , on Feb 28th 7.023 μ , on March 31st 7.075 μ , and on July 31st 7.155 μ . The curves on Feb 28th (when reticulocytes were only 4.5 per cent.) and on July 31st (when the patient was severely ill and reticulocytes were 81 per cent.) are compared in Fig 2. The curve made during the acute hæmolytic crisis is remarkable for the greatly increased variability, due mainly to the large numbers of macrocytes and microcytes. In the recovery stage these cells disappeared and the curve lay almost within normal limits. In form the curves are essentially similar to those given by Hawksley (1936), though in none of his cases was there any megalocytosis. The halo meter reading made during the first crisis was apparently incorrect. The large numbers of megalocytes seem to be equally balanced by the large numbers of microcytes and by the Price Jones method the mean diameter is almost normal. Fragility tests

the terminal attack especially in which the temperature was usually 97.0°-99.8° and prostration and mental symptoms were severe, the disease bore a certain resemblance to those cases described by Lederer (1925, 1930), and classified by him as being acute hæmolytic anæmia. There is, however, little

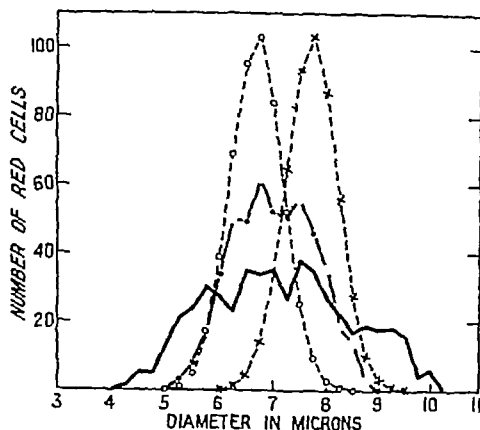


FIG 2.—Price-Jones curves in the recovery period (interrupted line) and during the terminal crisis (continuous line). The actual values are as follows. Recovery period Feb 28th, 1936. M.D. = 7.023, σ = 0.784, γ = 11.164 per cent megalocytosis, 0 per cent microcytosis, 1 per cent reticulocytes, 4.5 per cent. During the crisis July 28th, 1936. M.D. = 7.155, σ = 1.288, γ = 18.113 per cent megalocytosis, 13 per cent microcytosis, 15 per cent reticulocytes, 81 per cent.

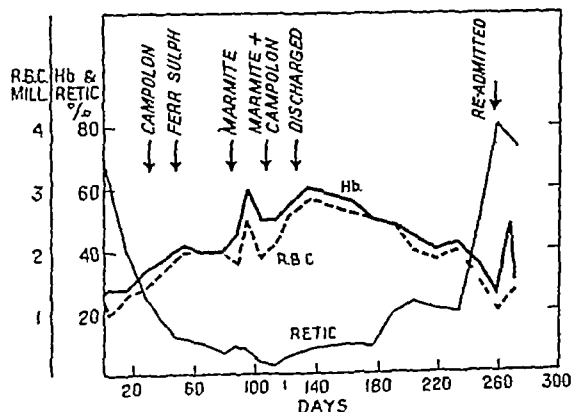


FIG 1.—Graphs showing the result of blood investigations over the observation period.

showed little variation from normal. The highest result 0.475 per cent to 0.300 per cent was obtained by the method of Beebe and Hanley (1936), and is little above the normal standard they give. Unfortunately the mean cell volume measurements made were inaccurate.

The picture of a severe hæmolytic anæmia with raised colour index, high reticulocyte count, and normal or almost normal fragility, suggested acholuric jaundice. A similar case described by Reynolds (1930) had a colour-index of 1.3, a reticulocyte count of 95 per cent, and fragility of 0.40 per cent to 0.32 per cent. This was cured by splenectomy, making the diagnosis of acholuric jaundice almost certain. In

doubt that the anæmias he describes are merely acute attacks of acholuric jaundice—a view taken by Scott (1935), Murray-Lyon (1935), and Vaughan (1936)—and there is apparently no real basis for a separate classification. Whithy and Britton (1935) consider the good transfusion results in Lederer's anæmia to be a valuable diagnostic point, as is also the experience of other authors and of Lederer himself. In the present case the results of transfusion were unsatisfactory, recalling in some ways those obtained in two of Dawson's cases (1931). While the first two transfusions of 250 c cm and 320 c cm, given 13 days before death were followed by a definite improvement in the general condition, this was not maintained. A further transfusion 4 days later was followed by a crisis, the patient becoming more deeply jaundiced, but without the unpleasant symptoms seen in Dawson's last case. A consideration of the first attack, in which no transfusions were given, might suggest that they should be withheld as long as possible, though in the terminal attack the patient was much more ill. None of the other remedies given seem to have been useful. When they were first administered the patient was in a recovery stage, and their continuance did not prevent a second attack. Splenectomy, which was not feasible owing to the patient's age and general condition, was the only treatment likely to have been successful.

The autopsy findings agree with those of the six cases given by Turnbull (1936). Similar collections of erythrocytes were found in the marrow at autopsy, though he does not appear to be certain, especially in the last two cases, whether they always lay within definite vessel walls or not. The condition, while resembling hæmorrhage into the marrow, clearly differs from it, since active hæmopoietic islets are to be found all through the mass of erythrocytes, and there is no evidence of degeneration. The process as seen near the edge of the marrow fat, where such exists, is due to a congestion and widening of the marrow capillaries as the fat disappears, so that the

blood comes to be in sinusoids lined by the former capillary walls. This is confirmed by the fact that the congested sinusoids are about equal in area to the fat cells they replace. The engorgement of the splenic pulp is another feature that seems to be common to all cases.

SUMMARY

1 A case of hæmolytic icterus was observed for nine months before death. 2 Mean cell diameter measurements by the Price Jones method showed a high coefficient of variability reaching 18 per cent during the terminal crisis. Macrocytes and megalocytes were then equally balanced so that the mean diameter remained within normal limits. 3 Autopsy findings were enlargement of the liver and spleen the splenic pulp being engorged with erythrocytes. The femur and humerus contained a rich red bone-marrow all through their length composed mainly of sinusoids filled with mature erythrocytes and apparently derived from the pre-existing capillaries. The tibia was normal.

I should like to thank Prof. A. E. Naisb for permission to publish this case and for his help during the period of the observations. I also wish to thank Dr. Alice Stewart of the Royal Free Hospital London for making one of the Price-Jones determinations and for her interest and advice.

REFERENCES

- Beebe, R. T. and Hanley, E. P. (1936) *J. Lab. clin. Med.* 21 833.
 Dawson, Lord (1931) *Brit. med. J.* 1 91 953.
 Hawkesley, J. C. (1936) *J. Path. Bact.* 43 665.
 Lederer, M. (1926) *Amer. J. med. Sci.* 170 560.
 — (1930) *Ibid.* 179 738.
 Murray-Lyon, R. M. (1935) *Brit. med. J.* 1 50.
 Price-Jones, C. (1933) *Red Blood Cell Diameters*. London.
 Reynolds, D. I. (1936) *Amer. J. med. Sci.* 179 549.
 Scott, A. M. (1935) *Lancet*.
 Turnbull, R. M. (1936) in *The Anemias* (Vaughan).
 Vaughan, J. M. (1936) *The Anemias*. London.
 Whitley, L. E. H. and Britton, C. J. C. (1935) *Disorders of the Blood*. London.

Clinical and Laboratory Notes

LYMPHOSARCOMA SIMULATING
DUODENAL ULCER

BY S. KEYS, M.R.C.S. Eng.

ASSISTANT PATHOLOGIST TO THE QUEEN MARY'S HOSPITAL
FOR THE EAST END, LONDON AND

W. W. WALTHER, M.B. Lond.

DIRECTOR OF PATHOLOGY AT THE HOSPITAL

This case shows under what a simple diagnosis lymphosarcoma may appear to the clinician. As a rule it is possible to diagnose general lymphosarcoma before the patient comes to the post-mortem room but in this case the disease showed symptoms referable to one organ only and the true nature of the condition was only suspected a few days before death.

The patient was a man aged 23, lorry driver by occupation. He was admitted complaining of abdominal pain of five years' duration. The pain was just below the umbilicus and passed to either side of the abdomen. At first it came on 1-1 hour after meals and lasted up to 2 hours. The attacks came on spontaneously and used to last for 3-4 weeks. There were free intervals of 3-4 months. Later the attacks had come on with great frequency and five weeks before admission he vomited for the first time. The vomiting became more frequent, usually occurring up to 15 minutes after a meal and it was of no difference to the pain. There was no hæmatemesis. Although the patient looked thin he did not complain of loss of weight. His appetite was good and his bowels were regular. He had never noticed signs of melæna. Occasionally he had attacks of flatulence.

The patient looked anæmic. The blood count was: hæmoglobin 41 per cent, red cells 3 million colour index 0.73, leucocytes 18,600 per c.mm. (polymorphs 77 per cent, lymphocytes 19 per cent, monocytes 3 per cent, eosinophils 1 per cent). There was no abdominal tenderness present and no other abnormal physical signs. Below the left angle of the mandible there was an oval mobile swelling 1 in. by ½ in. which the patient appeared to have had as long as he could remember.

A provisional diagnosis of duodenal ulcer was made and the patient was treated by drip transfusions and diet. Frequent occult blood examinations were strongly positive but a fractional test meal could not be estimated owing to the gastric juice containing abundant altered blood.

There was no improvement whatever. In spite of the drip transfusions the hæmoglobin fell although at times a rise of 1-3 points was recorded. He vomited on several occasions and each time the vomit contained altered blood. Three weeks before death a white cell count was 11,500 per c.mm. with the differential count of polymorphs 74 per cent, lymphocytes 25 per cent, and monocytes 1 per cent. A week before death the blood serum was noted to be icteric and gave a direct positive van den Bergh reaction. This suggested the possibility of malignant disease obstructing the flow of bile and on examination a tumour was discovered in the epigastrium. There was also general enlargement of the cervical glands. A fixed mass in the pelvis was found just before death. Altogether the patient was in hospital about seven weeks.

POST-MORTEM FINDINGS

Emaciated young man. Slight fullness of the thyroid gland. A few visibly enlarged glands in the neck. Abdomen distended. Tonsils not enlarged. The pericardial sac contained about 6 oz. of clear straw-coloured fluid. The heart was normal in size but the pericardial surface was covered by many patches of secondary growth. The chordæ tendinæ also contained a few nodules but the rest of the endocardium was normal. The lungs were congested, there were secondary deposits of growth in the right and left fourth ribs. The left lobe of the thyroid was normal, the right lobe was somewhat enlarged and contained a hard growth about the size of a walnut. The cut surface was hard and homogeneous.

The abdomen contained numerous loculated collections of faintly purulent fluid. The omentum was invaded by growth and was lying rolled across the epigastrium. All the abdominal lymphatic glands were greatly enlarged and matted together. A large mass of glands was present in the pelvis. The inguinal glands were enlarged. The stomach was infiltrated by growth and the mucous membrane showed numerous round ulcers with raised edges. One very large ulcer 1½ in. in diameter had completely perforated the posterior gastric wall and its edges were adherent to the liver.

The pancreas was one mass of growth. Glucose capsule contained a secondary deposit but the liver itself appeared normal. The spleen was also of normal size and looked healthy. Neither of these two organs contained macroscopic deposits of growth. Both kidneys were greatly enlarged and contained circumscribed neoplastic deposits of various sizes. There were a few enlarged glands all over the left ureter. The bladder was normal. Both testicles were normal. The brain and skull showed no abnormality.

MICROSCOPICAL EXAMINATION

Glands in neck—Filled with large round cells containing a well staining nucleus almost filling the cell. The cells are attached to a faint branching reticulum and show active mitosis. The very rare lymphoid tissue is compressed at the periphery of the gland. Bands of fibrosis can be seen traversing the gland.

Spleen—The mucous membrane shows partial destruction by sarcomatous cells. There is derangement of the alveolar structure of the mucosa. The mucosa appears to take place through the submucosa which contains an uninterrupted mass of sarcomatous cells. The peritesticular is partially invaded by growth.

Omentum—Complete invasion by growth.

Liver—The liver cells contain a coarse trabecular pattern but appear otherwise normal. The pattern

arteries are clear but the portal veins contain numerous malignant cells, which as yet show no evidence of invasion.

Spleen—The lymphatic element is replaced by large round cells with deeply staining nuclei. There is considerable congestion. The sinuses are filled with blood corpuscles and the sinusoidal walls appear normal.

Heart—Shows the growth infiltrating between the muscle strands and separating them. A coronary artery shows invasion of the adventitia, but media and intima are free of growth.

Thyroid—Shows invasion of the right lobe. The left lobe appears normal.

It is impossible in this case to determine the site of the primary growth, the enlarged gland in the neck being the only lymphatic abnormality to have existed for any length of time. It seems unlikely that the gastric symptoms could have been due in the first place to a neoplasm of such undoubted malignancy, for the patient would probably not have lived for five years.

It is interesting to note that generalisation of the disease occurred without alteration of the lymphocyte count. The raised polymorph count can be accounted for by the local peritonitis caused by the gastric ulceration.

We are grateful to Mr H W B Wright for permission to publish this case.

LYMPHATIC CYST OF THE MESENTERY AND VOLVULUS IN A CHILD

By REGINALD C JEWESBURY, D.M. Oxon.,
F.R.C.P. Lond.

PHYSICIAN IN CHARGE OF THE CHILDREN'S DEPARTMENT,
ST. THOMAS'S HOSPITAL, LONDON.

THE patient, a little girl aged 5 years and 8 months, was well until 2 years of age when she first complained of abdominal pain. Six months later she had another attack of pain accompanied by vomiting. At the age of 3 years and 9 months she was seen for the first time by a doctor. She then complained of acute umbilical pain and suffered from retching but did not vomit. Her pulse rate was 100 and her temperature 98.4° F., the only physical sign was some epigastric tenderness. The bowels were regular. Taking only fluids by mouth (with lemon and glucose solution to combat acetonaemia++) this attack was over in three days. During the attacks of abdominal pain she always adopted a kneeling position keeping her head bent down.

After this attack further medical advice was sought, a diagnosis of "acidosis" was made, and the appropriate treatment ordered. Following this she had several minor attacks for which it was not necessary to call her doctor. When aged 4½ years she had another fairly severe attack and was given glucose by mouth and per rectum. Two months later came another less severe attack and there was another one again after two more months' interval. At this period the urine showed coli bacilluria which responded to treatment. There were no further attacks for about 7 months, after which she again suffered from abdominal pain and vomiting, during this attack the pulse rose to 110, and there was some abdominal distension.

I saw the child for the first time on the third day of this attack, the abdomen was distended and rigid, but free from pain or tenderness. The pulse rate was 120 and the faeces was "abdominal", in fact the signs were those of acute obstruction with general peritonitis. Laparotomy was performed that

same day, as speedily as could be arranged, by Mr Max Page.

The whole of the small intestine was distended and deeply congested, as was also the whole of the mesentery. The bowel was completely obstructed after having become rotated on the mesentery. The strangulation was reduced by rotating the whole of the small intestine through three complete turns. In the cavity of the pelvis, and hanging slightly out of it, was a large, butter yellow-coloured cyst which at first looked like a distended bladder. The cyst was opened and about 15-16 oz. of thin milk-like fluid was evacuated, the cyst was situated in the mesentery close to its attachment to the small intestine about 2 ft. above the ileocaecal valve. The cyst wall was removed and tied off, and the abdominal wound closed, a drainage tube being left in.

The child died about four hours after the operation.

The following are notes from post mortem report by Dr S. Wyard.

The whole of the small bowel from the duodenojejunal flexure to the ileocaecal valve is enormously distended, the wall is plum coloured and there are numerous subserous and submucous hemorrhages. The surface is smooth and shining. About half an inch above the ileocaecal valve is a mark encircling the bowel obviously due to a tight strangling constriction. The caecal and ascending meso-colon is congested and shows many hemorrhages, the whole of the mesentery is also congested and hemorrhagic. About two feet below the duodenojejunal flexure is a surgical incision about four inches long, involving the mesenteric border of the bowel, the incision has been completely closed by sutures. Fluid removed from cyst, pale yellow and turbid, contained much albumin but no organised elements. The wall of the cyst on section appeared to consist of mesenteric tissue.

The time of origin of this cyst is doubtful, it may have begun when the child was two years old or it may have been congenital. Its recognition during the early stages was obviously difficult, but the recurrent attacks of abdominal pain and sickness were probably due to it. Refuge in the diagnosis of "acidosis" was a misleading factor in this case as it has been in others.

Lymphatic cysts of the mesentery are rare and not many cases have been recorded in children.

Bland Sutton (1922) comments on "a rare but interesting lesion known as chyle cyst of the mesentery." He compares them to omental hydroceles and ovarian cysts, and he states further that in infants or children, where many of them are found, these cysts are connected closely to the mesenteric border of the intestine and push their way between the layers of the mesentery. He concludes that these cysts are important, for they have caused fatal intestinal obstruction.

Swartley (1927) has written an interesting article on "mesenteric cysts" and describes the case of a girl, aged 7 years, which is very similar to the case which I now publish.

Eve (1898) reports the case of a cyst between the layers of the mesentery of the jejunum in a male child aged 11 weeks, and also in a child aged 3 years and 8 months, who had been admitted to hospital for "intestinal obstruction." Braquehaye (1892) classifies mesenteric cysts as follows—

1. Sanguineous cysts—usually traumatic and occurring as diffuse hemorrhages into the mesentery, into pre-existing cysts or into solid tumours.

2. Lymphatic cysts, comprising chylous and most of the serous cysts. These arise in the thoracic duct, in the chylous vessels or in the lymphatic glands of the mesentery.

3. Congenital cysts, chiefly dermoid, but occasionally cysts of the Wolffian body.

Lymphatic cysts are usually situated in the mesentery of the small intestine, usually near the spinal border,

but they have also been reported to occupy the mesocolon

Pederson (1928) has reported the case of mesenteric cyst in a girl aged 7 years which ruptured after an injury and in whom there was a history of previous intermittent attacks of abdominal pain Collins and Berdez (1934) report the case of a mesenteric cyst in a boy aged 4 years in whom a diagnosis of appendicitis had been made Friend (1912) states that cysts of this nature may occur at any age and in either sex In 52 cases the youngest was a child of 5 weeks and the oldest 80 years Raich (1890)

reports the case of a cyst between the two layers of the mesentery containing 6 pints of fluid which he thought had been caused by rupture of a chylous vessel of the mesentery

REFERENCES

- Bland Sutton J (192) Tumours Innocent and Malignant London
 Braguehaye, J (1896) *Arch gén Méd* 2 91
 Collins A. N. and Berdez G. L. (1934) *Int Surg* 28 335
 Eyle H (1898) *Med. chir. Trans.* 81 3
 Friend E. (1912) *Surg. Gynec. Obstet.* 15 1
 Pederson T (1928) *Hjælpsskrivende* 71 5 7
 Raich A. (1890) *Trans. Obstet. Soc. Lond* 31 311
 Swartlow W. B. (1917) *Int Surg* 85 886

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF OTOTOLOGY

At a meeting of this section on May 7th the president Dr DOUGLAS GUTHRIE in the chair a discussion took place on

Otitis Media in Early Childhood (under 5 years)

Dr LE MÊTE (Paris) opening the discussion dealt almost exclusively with the kind of cases seen at 15 months of age and under based upon twelve years' experience at the children's hospital in Paris He said he had to include mastoiditis as no infection of the tympanic cavity occurred without infection of the mastoid too Infection extended from the pharynx to the mastoid The Eustachian tube was very short but in the infant its calibre was larger than in the adult; the mastoid antrum in the infant was also larger than in the adult and its external wall was a mere thin lamina of bone In the first stage of otitis the rhino-pharyngitis spread to the Eustachian tube and the change of colour in the tympanic membrane indicated its participation in the reaction Usually a few days after the performance of paracentesis the condition improved A more serious type of otitis was the primary purulent oto-mastoiditis To this condition Dr Le Mète gave the name unsuspected otitis as the symptoms instead of being localised in ear and pharynx, were systemic and general In an infant febrile with no apparent cause this type of mastoiditis must be suspected A third and less frequent type was an otitis mastoiditis and here a bone lesion was present requiring removal of bone A skanogram was useful in this type but every care must be taken in interpreting it Dr Le Mète had found it best to do the mastoid operation in two stages He wished generally speaking to insist that the surgery in infants must be done with great speed The routine in his hospital was first to incise the periosteum and a day or two later to remove the portion of bone

Dr T RICHIE RODGER (Hull) analysed the 599 cases of acute otitis media seen in children under 3 years of age at the Victoria Hospital for Children Hull since the ear and throat department was established there nine years ago Of these cases 249 were bilateral involving 818 affected ears 185 cases were of infants under one year of age 80 being bilateral infections There were 200 cases in children between one and two 86 of them being bilateral Of the 14 cases between two and three 83 were bilateral and 26 per cent required mastoid operation The bilateral condition was most frequent in the first four years of life and thus both ears should be examined even when the mother drew attention to one only and further thorough examinations

should be made at intervals during the whole time the patient was under observation Sometimes the appearance of the tympanic membrane was deceptive Probably many members could recall cases in which the temperature remained high or malaise continued despite myringotomy on one side and this was explained by a discharge from the other ear The incidence of mastoiditis requiring operation proved to be higher than was expected—namely 10 per cent of all infected ears at an age under one year In the third year it was 26 per cent in the fourth year 21 per cent The proportion of cases operated upon was sure to be affected somewhat by the personal views of the surgeon Every effort was made the present chronic otitis If conservative measures including removal of adenoids were not successful operation was recommended at a time which varied with the nature of the case When mastoid tenderness or high temperature did not abate operation was carried out without further delay A bilateral infection did not necessarily mean a more virulent form of case Otitis media was often associated with diarrhoea and vomiting and sometimes a coincident chest condition had to be excluded as the cause of the symptoms and signs before the mastoid was explored The incidence of tuberculosis in these cases had proved to be surprisingly small under 5 per cent in the series described; in a discussion on the subject in 1913 the incidence given was 50 per cent of cases in Edinburgh up to one year of age and 27 per cent in the second year of life Dr Rodger attributed this vast improvement to better sanitation and hygiene and the active educational work of child welfare and other clinics When tubercular otitis did occur the treatment must be radical

Dr J H LUNA (Birmingham) presented an analysis of the results of consecutive post mortem examination of the middle ear and mastoid antrum of 880 children 80 per cent of whom were aged 2 years or under The rest ranged between 2 and 14 years but the number over 5 years was small; 52.4 per cent of the children were found to have a purulent infection of the middle ear and mastoid antrum Of children dying in their first year as many as 62 per cent had otitis media in the second year 53 per cent in the third year 33 per cent otology might thus play some part in reducing the mortality The incidence of otitis media decreased progressively with the child's age; a slight rise between the third and fifth years might be related to school entrance Among 486 children in whom one or more acute otitis cases were examined post mortem a purulent infection was found in 162 (33.6 per cent) 150 had otitis media and 101 had no otitis In 200 cases examined histologically some had two or three kinds of virulent organism but the commonest was the streptococcus tubercle bacillus and

in 2 cases, the diphtheria bacillus in one; 238 infants under 2 years of age had severe diarrhoea and vomiting, either as a major complaint or a complicating factor. Dysentery organisms were found in 4 of these cases, 2 of which showed definite evidence of bacillary dysentery. Dr Ebbs did not attribute the gastro enteritis to otitis media but suggested that it was a serious factor in bringing about the fatal issue. A high temperature was nearly always associated with acute otitis media. Many patients showed their infection by a steep rise in the pulse rate, in certain infants, who maintained a temperature of 96° and 97° F for some days, the onset of the infection was marked by a jump in the pulse rate. The ears of all infants with pronounced gastro intestinal disturbance should be examined, drums should be freely incised but more extensive operation should be delayed when possible. In prophylaxis, breast feeding was very important. Only 2 among this series of autopsies were of infants who had been breast fed for an appreciable time. The danger of exposing these infants to respiratory affections suffered by adult contacts must not be forgotten. Dr Ebbs said that the results of his investigation pointed to a possible coöperative effort between the paediatrician and the oto-laryngologist which might be of very great value in the reduction of infant mortality.

Mr W STIRK ADAMS (Birmingham) spoke particularly of medical as contrasted with surgical otitis. Patients admitted to hospital because of something else who developed otitis caused considerable anxiety. Of 15 cases of secondary otitis developed in his hospital during the last two years 10 belonged to the diarrhoea and vomiting group. Of the infants who had diarrhoea and dysentery about a third died, thus the problem was very serious.

Mr C E SCOTT (Edinburgh) said that in the ear and throat department of the Royal Edinburgh Hospital for Sick Children, he and Dr R B Lumsden had treated 564 cases of suppurative otitis media between 1934 and 1936 inclusive, 145 of the children were under a year old and 419 were over one but under five years old. 154 required operation, of 136 who were subjected to the Schwartze operation 132 recovered. As to complications, 2 developed erysipelas, 4 measles, 4 scarlatina, 2 kidney trouble. The only intracranial complication was thrombosis of the lateral sinus (4 cases). Myringotomy was carried out 52 times, and 14 of those patients subsequently required a Schwartze, 22 per cent of the total number had a Schwartze done without previous myringotomy. They had been impressed with the value of the X ray picture of the mastoid, even in such young infants. Tuberculous infection of the middle ear was formerly much more common in young children than now, in the period under review the incidence was only 1.5 per cent of the total.

Dr LUMSDEN, referring to the occurrence of tuberculous infection of the ear, said that at a hospital 35 miles from Edinburgh the incidence was nearly 40 per cent, yet a careful inquiry showed that the disease was fairly evenly distributed between town and country dwellers.

Mr ERIC WATSON WILLIAMS (Bristol) said that the results of an analysis of a series of cases of mastoid disease made by him had suggested that the incidence was highest in children under a year old, the highest incidence of otitis media was in the first two years of life. Otitis media meant infection of the whole middle ear tract. There was no barrier dividing the tympanum from the mastoid, which became infected a few minutes after the tympanic cavity was diseased. If a child's condition caused it one sleepless night,

that was an indication for myringotomy. Quick operation was essential, a good average was a minute for each month of age—e.g., for a child of 7 months, a 7 minute operation. A 20 minute operation was a severe ordeal for a young infant.

Dr MCNAIR SCOTT said that, as a paediatrician, he was sometimes puzzled, when looking at the ears of infants, to know what to do. A child perhaps had an upper respiratory infection and a red ear drum, but showed no indication of being in pain. Should that ear be opened? If left without opening a certain number of infections subsided, in others general symptoms increased and the ear had to be opened next day. A red ear drum was commonly associated with pneumonia, but often no local intervention was required. Type 3 pneumococcus seemed to have a special predilection for the ear, and perhaps the drum should always be opened when the infection was of that type.

The PRESIDENT said that this subject had attracted too little attention from otologists. Otitis media was found in a large proportion of infants in hospitals, whatever the disease which brought them there, and at autopsy pus was found in the middle ear in many of them. The question arose whether this was a primary or a secondary condition, whether it was responsible for the malnutrition, pneumonia, or gastro enteritis from which so many suffered, or was a secondary phenomenon of comparatively slight importance. Ten years ago he had prepared a chart to show the extraordinary prevalence of otitis in infants, from 75 per cent to 90 per cent of infants, who died from all causes before completing their first year, had otitis. One reason for this high prevalence was that when the child was born there often remained fragments of embryonic connective tissue, such as filled the middle ear during embryonic life and became absorbed at about the time of birth. Portions might remain in the corners of the tympanum, however, and that embryonal tissue was very liable to become infected. The President asked why Dr Le Mée did the mastoid operation in two stages. He agreed with Dr Ebbs that the mastoid operation was seldom justifiable in children suffering from gastro enteritis. He did not think X ray evidence very useful in connexion with mastoiditis in children, but it might show the position of the lateral sinus, and its state of pneumatization.

Dr LE MÉE, in reply, said that since the mastoid operations were done in two stages at his hospital complications had been fewer, this experience was shared by Neumann. He used as an anæsthetic agent very cold water or ice applied to the back of the ear, he was sure it prevented the infant feeling pain.

Dr RITCHIE RODGER said that when he referred to speeding up the operation he was not thinking of the simple incision.

ROYAL SUSSEX COUNTY HOSPITAL, BRIGHTON.—At a special court of governors of this hospital on May 5th it was announced that the electrical and massage work which is carried out at present in a basement of the hospital is to be transferred to an adjoining property at a total cost of £8000, towards which Mrs H G Latilla has contributed £3750. A balance from a fund has reduced the sum required to £2000, and the governors are appealing for this sum. The new department is to be called the Latilla department of physical medicine and it is hoped it will be opened early next year. The transference will allow of a further extension of the X ray department at the hospital, and provide room for the installation of the Chauli apparatus presented by the Sussex branch council of the British Empire Cancer Campaign.

ROYAL ACADEMY OF MEDICINE IN IRELAND

At a meeting of the section of obstetrics on April 9th with Dr T M HEALY in the chair a paper on the treatment of

Varicose Veins in Pregnancy

was read by Dr EDWARD SOLOMONS. Sixty patients he said were selected at the antenatal department of the Rotunda Hospital for treatment of varicose veins by injection. They were chosen either on the ground that the veins would be easier to inject during pregnancy or because of symptoms such as cramps or swelling of the legs irritation of the skin pain in the veins or mental or physical discomfort. The condition was bilateral in 38 cases and unilateral in 22 while 1 had varicosities on the vulva as well. A history of phlegmasia was regarded as a definite contra-indication to treatment and in all cases where impairment of the deep circulation was suspected special investigation was made. The injection was done with the patient lying down and the leg slightly elevated thus the empty vein technique was used but a tourniquet was not required since only clearly visible veins were injected. The fluid injected was a sterile solution of quinine hydrochloride (0.260 g) and urethane (0.133 g) in 2 c.c.m. of distilled water made up by Parke Davis and Co. and the maximum amount given at one time was 2 c.c.m. usually distributed in four doses at different sites. In 15 of the 60 patients the veins were very large and an elastoplast bandage was applied to the whole leg below the knee immediately after injection. This was removed in three weeks time and in 7 patients no further treatment was required. In the other 8 further injections were given and the bandage again applied. The interval between injections was never less than a week and at least a fortnight was allowed between injections at the same site so as to let any reaction settle down. It was usually advised that injections should begin near the foot and work upwards but in these cases the veins most enlarged were injected first.

The results said Dr Solomon were very satisfactory but not all the women were free from subsequent discomfort. In 6 patients there was enough inflammatory reaction to necessitate treatment and 2 of these said they would have rather remained untreated. In 4 cases varicose veins of the vulva were treated by injection with very good results and in 2 dramatic relief was obtained from severe pruritus. It had only been possible to follow up 45 out of the 60 patients, but these had no complications in the puerperium and 3 had subsequent confinements without recurrence of the condition.

The CHAIRMAN asked why the treatment was stopped in the seventh month of pregnancy. He also asked whether Dr Solomon would limit injection to cases in which there was actual pain. He regarded the results as extremely good and believed that almost complete success might be expected among patients who could afford to have more rest during and after pregnancy.

Dr A H DAVISON said he understood that urethane gave rise to a lot of pain if the injection did not get into the vein. Had Dr Solomon any experience of sodium morrhuate?

Dr O DONNELL BROWNE asked Dr Solomon how he decided on the site of injection and said that varicose veins in the vulva were often very difficult to deal with.

Dr F DOYLE had seen a patient who had had injections for varicose veins and suffered great trouble in subsequent pregnancies. He was rather antagonistic to injections during pregnancy though they might sometimes be beneficial.

Dr G THIERRY was in favour of the injection of varicose veins after pregnancy but was not enthusiastic about injection during pregnancy. If it was done in the last three months he doubted whether much relief would be obtained. For varicosities of the vulva, especially during the early months it had a very definite place.

Dr J S QUIX said that if the treatment of varicose veins in pregnancy would allow a woman who would otherwise be more or less bedridden to get about he thought it should be used. But if the subsequent reaction or the period that had to elapse before recovery was such that no obvious benefit would accrue in the last two months of pregnancy, then it seemed that the treatment was unnecessary. In these cases one must consider not only the patient but also the doctor. If anything happened after the injection of a varicose vein the injection would certainly be blamed whether or not it had the remotest connection with what had happened.

Mr R M CORBET said there were apparently two classes of patient—the one with bad varicose veins who kept them after delivery and the one with bad varicose veins who showed no sign of them six months later. In the second type injection was probably unnecessary but in the first he was sure it was very useful.

Dr SOLOMONS in reply said that if he saw a case in the eighth month that he thought could be cured by injections in a fortnight's time then he gave a course but otherwise he only treated patients up to the sixth or seventh month. He did not attempt injections unless the veins were causing discomfort. One of the most severe reactions he had got was in a case in which he used sodium morrhuate. In patients who had very large veins especially near term injection treatment was foolish the treatment then was an elastoplast bandage. He thought that with the gradual advance of injection treatment sloughing would be much less frequent than at present. If there was any doubt as to whether one was in the vein it was best to withdraw the needle. He did not consider that patients who were bedridden derived any benefit from injections. Although certain veins might go away after pregnancy it had to be remembered that the next time the patients became pregnant they would suffer similar discomfort. The best time to inject was when the veins could be seen fairly easily.

Diabetes and Pregnancy

Dr H V TIERRE read notes on three pregnancies in a diabetic.

The patient came under his care in January 1933. She was aged 27 years married 15 months and pregnant for the first time. She had been under treatment for diabetes mellitus during the previous four years and two months and before becoming pregnant had been admitted to hospital in diabetic coma. She was receiving 70 units of insulin daily and despite this her urine was rarely sugar free and her blood sugar remained high. In April 1933 when 32 weeks pregnant she went into labour. The baby weighing 4 lb. lived half an hour. Five months later she again became pregnant and at 32 weeks gave birth to a baby weighing 7 lb. which died shortly after delivery. The third pregnancy began two months later and with a more stringent diet and larger doses of insulin proceeded to 32 weeks when labour was induced. The

baby when born weighed 8½ lb and appeared healthy, but died 48 hours after birth. At autopsy the cause of death was found to be suprarrenal apoplexy.

Dr Tighe said that nothing was observed in this case to support the view that the diabetic mother benefits from an additional supply of insulin from the foetus or that pregnancy produces a lasting exacerbation of the diabetes. While insulin has greatly lowered the maternal mortality, it has not proved so effective in reducing the foetal mortality. The causes of foetal death were poor control of the maternal disease during the later months, hydramnios, congenital abnormalities and over development of the foetus. Neonatal hypoglycaemia, following hypertrophy of the islands of Langerhans, had also been suggested as a cause of foetal death, but no enlargement of the islands was found in the baby which came to autopsy. Where there was dystocia due to the large size of the babies he preferred induction to Caesarean section.

Dr O'DONEL BROWNE knew of no recorded case of diabetes with three pregnancies. This case was characteristic in that the labours were premature, hydramnios was present in each of the pregnancies, the children were overweight, and while two were born dead the other did not survive long. It would have been interesting if Dr Tighe had been able to test the liquor amni for glucose—particularly if foetal urine had also been tested, for some authorities claimed that the presence of glucose in the liquor amni indicated its origin as a transudation from the maternal system since foetal glycosuria was extremely rare. As regards treatment, Dr Browne's view was that the diabetes should be treated irrespective of the pregnancy and that induction should be practised if disproportion was likely to arise owing to the size of the foetus.

Dr QUIN disagreed with Dr Tighe's view that there was no objection to a diabetic patient becoming pregnant. The results of pregnancy in diabetes were such that it should be discouraged unless means could be found for obtaining more fortunate results.

Dr MICKS referred to two cases of diabetes under his care in which labour had been induced, in both of which the baby had been strong and over the usual weight at birth, and the mother had done very well. In diabetes during pregnancy the urine should always be tested for ketone bodies, acute cases which went too far were liable to become quite uncontrollable. There was nothing to be gained by giving very large amounts of insulin.

Dr CORBET said that of two diabetic cases under his care during the last year one had had no trouble at all, whereas the other was fatal, the patient had been getting 90 units of insulin a day before she became pregnant. The lesson to be learned was that one must not allow oneself to do anything in connexion with the pregnancy while the diabetes was very severe. In these cases he always refused to induce labour. In his case that died, the patient came into labour herself, produced a macerated foetus, and died very quickly.

Dr TIGHE, in reply, said that the diabetes should be treated as a thing quite apart from the pregnancy, and the pregnancy should be allowed to proceed normally. As the children of diabetic women were not likely to be diabetic, there could not be any plea for sterilisation of diabetics on eugenic grounds.

Face Presentation

Dr DAVIDSON, master of the Rotunda Hospital, showed an X ray film of a primary face presentation,

and also presented an analysis of face presentation at the Rotunda for the previous forty years. There were 175 cases, excluding anencephalus, a frequency rate of 1 in 450. A quarter of the patients were primiparae. The foetal mortality rate was 8.6 per cent. In 134 cases the foetus was delivered spontaneously as a face presentation, 11 were treated by internal version, 6 by Schatz and 7 by Thorn's conversion to vertex. Forceps were applied to the face in 8 cases. Caesarean section was carried out in 3 cases, perforation was required in 4, and pubiotomy in 1. There were only 3 cases of impacted face, a frequency of 1 in 58. During the ten years 1926-36 there were 77 cases of face presentation of which 71 were born spontaneously as face presentations. If there was no disproportion the case should be left to nature and spontaneous delivery expected. Interference was required, however, if the face was arrested at the brim or on the perineum. With arrest at the brim conversion to vertex or preferably internal version should be adopted, with arrest on the perineum forceps might be applied. There were very few cases of major disproportion in this series, Caesarean section only being adopted on three occasions.

Dr O'DONEL BROWNE pointed out that the Rotunda incidence of face presentation, as given by Dr Davidson, was approximately half the incidence generally reported—namely, 0.42 per cent. He strongly advocated non-interference except in the relatively rare instance when the fact became impacted in the pelvic cavity as a mentoposterior. In these circumstances conversion to vertex, or if necessary internal version, was the treatment of choice. In the earlier stages of labour, he practised Schatz's manoeuvre and had been gratified by the results. He strongly condemned forceps delivery in cases of face presentation when the chin was posterior, quoting the maternal fatality rate associated with such treatment as 12 per cent, with a minimum foetal fatality of at least 50 per cent.

Dr CORBET said that Dr Davidson's figures were very good. He had only seen one case of true impacted face, and this was terminated successfully by a forceps delivery after partial rotation of the mother and the baby both lived. He had seen two face presentation cases where the neck was so stretched that the baby could not hold its head up. Most cases were diagnosed when the face was on the vulva. The conversion of a primary face presentation in a multipara depended very largely on the contraction of the uterus and on the actual position of the face itself. Internal version could be exceedingly difficult. It was safe to leave the vast majority of face presentations alone, but one must be sure that the face was the whole problem, and that the primary fault was not disproportion. One should not wait too long, but should watch the cases carefully so as to be able to interfere in time if interference became necessary.

Dr DAVIDSON, in reply, said he thought the reason why so few Caesarean sections were done was because face presentation was a very uncommon result of flat pelvis.

OPHTHALMIC HOSPITAL IN JERUSALEM—This hospital, which is under the auspices of the Venerable Order of St John, is planning large additions and an appeal is being made for at least £20,000 to provide funds for the erection of a new block to contain eight wards for paying patients and a new out-patient department.

REVIEWS AND NOTICES OF BOOKS

Handbook of Hygiene

By JOSEPH W BIGGER, M.D. D.Sc. F.R.C.P.I.
D.P.H. Professor of Bacteriology and Preventive
Medicine University of Dublin, London Baillière
Tindall and Cox 1937 Pp 400 10s 6d

THIS book is intended primarily for medical students but the author hopes with justification that it will also help the practitioner who is not a specialist in public health to play his part in the prevention of disease. For such readers the prevention of disease has a more direct appeal than the promotion of physical fitness and Prof. Bigger wisely approaches most of his topics from the former angle. Not that the promotion of health is neglected. The last chapter is entirely devoted to the assessment of normal health a pursuit which is one of the greatest contributions the general practitioner can make to the study and practice of preventive medicine.

About a third of the book deals with communicable diseases their character mode of transmission epidemic behaviour and prevention. Separate chapters are given to insects and vermin, to parasitic worms and to diseases of uncertain aetiology including rheumatism diseases of the heart and blood vessels anæmia nephritis diabetes and cancer goitre is briefly discussed in the chapter on water. Water food, ventilation disposal of waste environment—i.e. climate soil building construction heating and lighting—occupational hygiene and personal hygiene receive consideration in separate chapters. Maternity infant and child hygiene have brief but probably adequate attention. A separate and informative chapter is devoted to poisonous gases especially those used in warfare. Vital statistics are the subject of the first special chapter.

It is essential that a book on hygiene with which students have little practical contact, should be easy to read and that any dogmatic statements made in it should be capable of substantiation. This book answers these requirements. The author makes it clear whether he is expressing a personal opinion or an accepted thesis. The chapters on communicable disease are carefully put together and modern in their substance. The brief discussion of vital statistics is excellent for the purposes of the medical student. With the reservation made by the author himself—that occasional errors are inevitable in a book of such wide scope—it can be cordially commended to teachers and students of public health as well as to general practitioners.

Passive Vascular Exercises

By LOUIS G. HERRMANN, A.B. M.D. Assistant
Professor of Surgery University of Cincinnati;
Director of Vascular Disease Clinic of the Cincinnati
General Hospital London J. B. Lippincott Co.
1936 Pp 288 20s

DISAPPOINTMENT has followed most surgical procedures designed to save limbs affected by structural arterial disease. Any alternative method which offers a substantial degree of palliation by conservative means is therefore of interest and an authoritative evaluation of Pavaex therapy by its inventors deserves careful consideration by those who have to undertake the management of this prevalent disorder. Dr Herrmann's book has been divided almost equally into two parts: one historical and theoretical and the other practical; the applica-

tion of the method is described and hints are given on the selection of cases suitable for its use. The development of the therapeutic use of positive and negative pressures is traced back to the eighteenth century. This portion of the book though of great interest seems to us unduly long. The physiology of the circulation also might have been more briefly (and more accurately) described since the success of Pavaex therapy depends on the precise degree and rhythm of the changes in pressure required to produce the best results.

The clinical section of the work gives the impression that the author has based his opinions upon theoretical considerations rather than upon the results of treatment. He states clearly the contra-indications to the method—spreading phlebitis infection and extensive thrombosis of the small vessels and he advocates its use in embolic obstruction of main vessels. It is well known however that the risk of gangrene in a case of main vessel obstruction is in any case comparatively slight whereas Dr Herrmann gives numerous examples of gangrene due to small vessel obstruction which have been amazingly improved by Pavaex therapy. There seems to be no doubt that this is a valuable aid to conservation in the treatment of threatened gangrene, but the book fails to indicate clearly the clinical criteria whereby those cases may be selected which should derive most benefit from it.

1 Oral Diagnosis and Treatment Planning

By KURT H. THOMA, D.M.D. Charles A. Brackett
Professor of Oral Pathology Harvard University
London W. B. Saunders Co. 1936 Pp 370 25s

2 Oral Diagnosis and Treatment Planning

By S. C. MILLER, D.D.S. and Twenty-two Contribu-
tors London J. and A. Churchill 1937
Pp 620 30s

IT is unusual to find two books published within a few months of each other having the same title and covering so closely the same ground. Prof. Thoma's book being by one author has the advantage of a continuity which works written by many contributors often lack. It is essentially a book of diagnosis and pathology is reduced to a minimum. The salient feature of the book is the description under various headings of the method of systematic diagnosis: the chapters on general physical examination laboratory tests and radiology give the practitioner sufficient information to keep his knowledge up to date and to enable him to correlate the various methods of diagnosis. The remainder of the book is devoted to a clinical study of the various dental and oral diseases. The common conditions familiar to every dentist are described as well as the more unusual oral ones which may give rise to some difficulty in diagnosis. The numerous illustrations many of them in colour deserve high praise.

2. Mr. Miller's work is more limited in scope. It deals chiefly with dentistry proper and discusses such aspects as caries, periodontal disease, bridge work, orthodontics, and denture design. It is more practical if more diffuse than Prof. Thoma's book. Some of the chapters are excellent such as that on surgical conditions by T. Blum and K. Ions of the hard tissue by A. Walker. The three chapters on periodontal disease show how firmly the concept of traumatic occlusion or as it is now termed traumatic occlusion is held in

America and how much it has influenced treatment. According to this book almost the whole treatment of pyorrhœa consists of correcting this hypothetical malocclusion which is regarded as the chief cause of the disease. Infection is only a secondary factor and does not appear to call for any special treatment. Extraction is only advised for teeth denuded of their periosteum to the apex, and gingivectomy is held to have but a limited application. The large number of illustrations are mostly good and the book is well produced. For reference purposes both of these books will be found useful though we must confess to some doubt as to how far they are likely to help the dentist in planning his treatment.

Synopsis of the British Pharmacopœia

Thirteenth edition. With addendum, 1937. By H. WIPPEL GADD, Barrister at Law, Middle Temple and Western Circuit. London: Baillière, Tindall and Cox, 1936. Pp. 200 + 12. 3s.

THIS useful little book has been brought up to date by the introduction of a twelve-page leaflet dealing with the Addendum, 1936, to the British Pharmacopœia, 1932. All the important modifications of the text of the Pharmacopœia have been included with the addition of certain changes in the Poisons Rules. Some difficulty will be experienced in applying to the main text of the synopsis the alterations given in the leaflet. It is to be hoped that an entirely new edition will be forthcoming with these alterations included. The remainder of the leaflet will be found useful as a source of speedy reference to the more important features of the new drugs and preparations of the Addendum.

Meditatio Medici

A Doctor's Philosophy of Life. By W. CECIL BOSANQUET, D.M. Oxon., Fellow of the Royal College of Physicians, formerly Fellow of New College, Oxford. Aldershot: Gale and Polden, 1937. Pp. 162. 7s. 6d.

THE aim of philosophy, according to Herbert Spencer, is to make science "a system of completely unified knowledge." William James defined it more brightly as the response to the "desire to attain a conception of the frame of things which shall on the whole be more rational than the somewhat chaotic view which everyone by nature carries about with him under his hat." Judged by these standards Dr Bosanquet's little book has certainly a claim to contain a philosophy. His condensed and objective summary of general scientific knowledge is written with a remarkable sweep and elegance. It is not clear why the title "meditatio" should have been chosen for we have come to apply the term to a highly individual mental act and the essay is about as impersonal as it well could be. Perhaps the author wishes to convey to us that any attempt to make a "frame of things" must in the end be a personal construction. And with all his efforts at self-elimination Dr Bosanquet's "Weltanschauung" gives us in reflex something like a portrait of his mind—in dry point perhaps—but none the less arresting in its finish and poise. In so far as he can be referred to a school he appears to lean to the doctrine of Heraclitus, to whom the central fact of the universe was that all things change, and as with most of those who are preoccupied with the mutability of things there is an undertone of pessimism to his thought. This does not prevent his summing up of things from being on the whole both just and sympathetic.

It is only when he treads on the treacherous ground of sociology that he makes an occasional false step—for example, his statement that under modern democracy "Freedom of labour is rigorously restricted in order that the clever and efficient may be duly handicapped to the level of the idler and the weakly." This is the sort of "loose stuff" off which it is easy to score.

Organic Chemistry for Medical Students

Second edition. By GEORGE BARGER, M.A., D.Sc., LL.D., F.R.S., Professor of Chemistry in Relation to Medicine in the University of Edinburgh. London: Gurney and Jackson, 1936. Pp. 251. 10s. 6d.

IN the preface to the first edition of this book, which appeared in 1932, Prof. Barger explained that in his view "the chief reason for including organic chemistry in the medical curriculum is to provide a basis for biochemistry or chemical physiology and pathology." With this guiding principle in mind he has passed lightly over some of the more important types of syntheses employed in organic chemistry, and has laid greater emphasis upon those aspects of the subject which are of more immediate biological interest and which are likely to be of use to the medical student in his later studies, the text more over is replete with somewhat out of the common facts and observations calculated to stimulate interest. The chief alteration in the present edition is the bringing up to date of the salient facts concerning the chemistry of the hormones and vitamins. The size of the book remains the same as before but there is a welcome reduction in price.

Elementary Human Physiology

By SHERBURNE F. COOK, Associate Professor of Physiology, University of California. London: Harper Brothers, 1936. Pp. 539. 12s. 6d.

THIS attractive volume is stated to be designed for students who require a less advanced treatment of the subject than do medical students. The author's estimate of his work is too modest. It is true that it falls just short of the type of text-book one recommends as being thoroughly adequate for a medical course, but many teachers of physiology would be relieved if they could be assured that every student in their class had a complete grasp of its contents. Prof. Cook's book must not be confused with the excellent short ones which present physiology to the completely uninitiated. It is straightforward physiology, set out in such a plain way that one cannot fail to visualise the functions described or to understand the principles underlying them. It is a live treatise, written on the assumption that the reader has a scientific training and a critical mind. The book will make some wonder if many of the older texts, which run through edition after edition in order to be kept up to date, have not served their period of usefulness. For this work is a real revelation of what can be done by making a completely fresh start and presenting physiology as it is to-day, rather than by regarding new knowledge, which sometimes strikes at the very foundations of a subject, as in the nature of an addition to what is already known. The pictures and diagrams are refreshing, instructive, and not dictated by tradition. The coherence and almost ruthless elimination of irrelevancies in this work make it an excellent foundation for any course of study comprising physiology.

THE LANCET

LONDON SATURDAY MAY 15 1937

SHALL I GET BETTER?

AMONG many letters praising the articles on prognosis which appeared in these columns between 1934 and 1936 we had one from a practitioner who hoped they would soon cease to appear. Pressed to explain why, he wrote: 'In a large practice one has not a great deal of time for reading and I am more interested in diagnosis and treatment of patients I see every few days than in knowing what is going to happen to them perhaps many years hence. Life seems too short for the leisurely atmosphere of prognosis to appeal to me. This critic had assumed without justification that the authors would deal only with remote and not with immediate prognosis. But the main interest of his comment lies in his conception of the doctor as concerned with the cross-section of the patient's disorder at the time of the consultation rather than with any serial story of its manifestations throughout life. Unfortunately many doctors must perforce restrict their horizon in this way if they are to get through their daily round. But such an attitude is dangerous if only because unless the practitioner makes a mental picture of the probable course of the disease the course of treatment he prescribes may be unwise or at best unnecessary. In the words of Hippocrates he will carry out the treatment best if he know beforehand from the present symptoms what will take place later.' Moreover it must not be forgotten that to the patient diagnosis and treatment are merely the technique of his adviser used as means to an end. It is with the end alone that he himself is deeply concerned and to him the prognosis is the essence of any medical consultation. Indeed all his questions (e.g. 'What is the matter with me? What can you do for me?') are really designed to elicit the answer to one much more urgent which he hardly dares to frame lest the response should shatter his confidence. Shall I get better and soon enough not to endanger my livelihood or (on a higher plane) the completion of the work I have in hand?

This in relation to every patient whose indisposition is not trivial is the real problem confronting the practitioner day by day. All his energy is bent to its solution though he may not realise it. And since the most potent agent at the doctor's disposal is his power to give the patient confidence he cannot afford to ignore or disregard this unspoken desire to know something of what is likely to happen. Not that any statements made need be specific or unguarded to satisfy the patient requires much less definite information than might be expected. His need for reassurance is great and he will not only snatch at a straw

of hope but will gain support from it so buoyant to him, as its fabric. Even when the diagnosis is obscure and the treatment expectant such negative conclusions as an experienced clinician may safely draw will often suffice to give not only the patient but his friends the help they need. Even when it is not possible to say as it quite often is 'you are going to get well,' the doctor may be able to recognise, deep below the surface the particular phobia which is a torture and to remove it by an assurance for example that whatever the trouble is it is certainly not cancer. So twisted and illogical are our subconscious fears that a man may live contented for months suffering from a disease far more fatal than the dreaded one. An example recently before us was a woman whose slow recovery from an atypical pneumonia led to suspicion of tubercle. She would hardly consent to go to a chest hospital for observation and radiography so great was her fear of contracting the infection. A temporary improvement gave her a respite and when soon afterwards a thoracic growth was diagnosed she was so much relieved at the exclusion of tubercle that she submitted cheerfully to a course of deep X ray treatment enjoyed to the full the relief from symptoms it produced and when she became ill again remained hopeful of another remission until her peaceful death.

Similar stories will occur to all of us. They are relevant to discussions on prognosis in so far as they show that the patient's attitude to any disease is coloured by his previous impressions of the prognosis it carries. Often these impressions are incorrect or distorted and hitherto the family doctor has not had any convenient means of reference to authoritative opinion. The series of articles on prognosis of which the second group is published this week in volume form was designed to fill this gap. No attempt was made to cover the whole ground of medicine and surgery. The invited authors dealt only with subjects on which they felt they had something to contribute based either on wide experience or on a special study. But we have reason to think that the notes in each of the selected subjects will provide at best a safe guide to prognosis in individual cases and at least a foundation on which more accurate estimates can later be built based on statistical data.

PRECAUTIONARY ENTEROSTOMY IN APPENDICITIS

ALMOST all deaths from appendicitis are preceded by diffuse peritonitis and the mortality of this condition is estimated at 25-40 per cent. F. C. CONNELL points out that such deaths should be attributed to septic peritonitis rather than to the appendicitis from which it originates and he argues that as death from peritonitis is preceded by distension and ileus and as the treatment of established ileus is unsatisfactory, we should try to prevent distension, ileus and death by prophylactic intestinal decompression and enterostomy at the time of the appendectomy. This interesting suggestion is made in a brief editorial article and

he does not bring forward evidence in support of it other than the statement that it seems to reflect a growing opinion.

When such a procedure is contemplated a number of considerations arise. The first is that when one is operating for appendicitis it is impossible to estimate accurately the extent of the peritonitis without subjecting the patient to the serious risk of further spread of the infection within the abdomen. If we hold to the time-honoured dictum of MURPHY to "get in quick and get out quicker," if we believe this advice to be of the utmost importance in our operation, any such investigation will be precluded. Secondly, how far would an opening in the intestine be valuable? We do not know whether there is greater risk in encouraging the intestine to move than in fostering the abolition of peristalsis in an attempt to localise the infection. We do not know whether more poison is absorbed from the mucosa of the reflexly immobilised intestine or from the serous lining on its exterior. We do not know, in fact, whether it is better to allow the unaccustomed stagnation of intestinal contents to persist or to run the risk of some increase in the area of peritoneal infection by encouraging an action of the bowels. Then again the ileus concerns the intestine in the region of the infection. It is from this pathologically changed gut that any absorption of toxin is likely to take place, but every surgeon who has performed enterostomies knows how useless and ineffectual it is to make an opening in such bowel. There is no discharge from the stoma until or unless the peritonitis subsides, indeed such a discharge is a sign that the patient is likely to recover, just as an action of the bowels in cases of peritonitis has almost from time immemorial been held to herald recovery. Hence an enterostomy, to be effective, would have to be made above the region of peritonitis, and where this is will be only a guess if the least possible exploration is carried out, as seems advisable. Such an enterostomy would do nothing to drain away the stagnating, decomposing, and poisoning contents of the paralysed segment of intestine. It is more likely to give exit to harmless intestinal content and lead to loss of fluid which the patient can ill stand.

These reflections are no more than inferences from the known pathological condition of the peritoneum and intestine in diffuse peritonitis and from the practical results of enterostomy. The question has almost certainly to be judged upon such considerations because we have no way of measuring the degree of toxæmia caused by absorption from the peritoneal surfaces or intestinal lumen. Without a technique for investigating such problems we cannot, for example, claim that enterostomy diminishes the amount of toxic substances circulating in the blood. Clinical impressions of the course of appendicitis in patients with enterostomy may well be erroneous because we have no means of evaluating the primary degree of peritonitis. Probably most surgeons would agree that the difference between the course of the disease in those with an enterostomy and

those without an enterostomy is in no way striking, and many would say that it is difficult to detect. But if there is a definite feeling that good results may arise from drainage of the intestine, despite its many disadvantages, there is obviously a case for testing this method by such clinical observations as we are able to make.

FOUR PHASES IN SYPHILIS

THE differentiation of the venereal diseases from each other took long to achieve. At the end of the eighteenth and first half of the nineteenth century the views of medical authorities on their nature and the degree to which they were spread by contagion were so hopelessly confused that syphilis and soft chancre and even gonorrhœa were not really defined as separate entities, and the "mercurial disease" was regarded as a far more serious condition than the symptoms for which the metal was prescribed. Even such a careful observer as JOHN HUNTER (1728-93) is said to have regarded gonorrhœa, syphilis, and soft chancre as the same, and to have denied the existence of visceral, tertiary, and hereditary manifestations. The whole tendency at that time was to belittle the effects of venereal infection and it is to the strenuous efforts of PHILIPPE RICORD (1800-89) that we owe the clear conceptions that have been established and have persisted almost unchallenged to the present day. As a result of his clinical and pathological studies he wrote a book, "*Leçons sur le Chancre*," which appeared in 1858, in which he formulated the doctrine that "*le drame de la syphilis se divise naturellement en trois actes ou périodes*." Rightly or wrongly this doctrine has now held sway for some 80 years and has proved its value both as a basis for teaching and in planning and conducting treatment. Prof JOHAN ALMKVIST of Stockholm has challenged¹ this classical conception of the pathology of syphilis. His argument is based almost entirely on histological studies to which he has devoted a large measure of his spare time since his appointment to the professorial chair in Stockholm in 1911. These investigations have led him to formulate certain precepts, which he sets out and supports with a wealth of illustrative photomicrographs. He claims that in each kind of tissue spirochætes bring about a histological reaction which is characteristic of the tissue in question, but different from the reaction produced in other tissues. The changes attributable to the syphilitic process in each kind of tissue are, according to ALMKVIST, uniform throughout the whole course of the disease, they are the same in recent and in old standing syphilis, and cannot be separated into three stages. Further, the different clinical manifestations of the syphilitic lesions are not due to differences in the reactions between the spirochætes and the tissues, since the tissues react uniformly throughout the whole course of the disease, but rather to such factors as the varying location of the spirochætes, differences

¹ *Acta derm venerol Stockh* 1937, 18, Fasc. 1. *Brit J Derm* 1937, 49, 1.

in the degree of immunity toxin antitoxin reactions, nutritional disturbances and so forth.

ALMKVIST postulates that broadly speaking there are only two types of reaction to the spirochate demonstrable by microscope—proliferative and degenerative. In the epidermal layer there is a proliferation of new cells of the same type as the mother cells with resultant hypertrophy of the rete Malpighii and the interpapillary epithelial processes which is the process mainly responsible for the initial chancre. The connective tissue responds similarly but here we find a more varied microscopic picture for new cell elements—plasma cells round cells, and lymphocytes—make their appearance and the resulting histology is therefore not always the same. For this type of reaction ALMKVIST proposes the term infiltration and as connective tissue is more widespread than any other in the body we find it as we should expect the commonest of all syphilitic processes throughout the entire course of the disease. Lymphatic vessels and blood capillaries are similarly stimulated to proliferate but the specialised and more highly organised cells such as the nervous muscular hepatic and renal cannot do so. Their connective tissue framework will react as described above they themselves however in course of time either in response to the toxic effects of spirochatal invasion or as a result of circulatory deprivation undergo late degenerative alterations. Infiltrative and degenerative changes are similarly observed in the walls of the larger blood vessels and may later account for the symptoms of aneurysm and arterio sclerosis. Two other subsidiary changes have to be noted—the pustular and necrotic. The pustule is less commonly met with than formerly. It is never a primary reaction but always occurs in previous infiltrations of the connective tissue. When well developed it is the histological background of so-called malignant syphilis. Necrotic changes are similarly superimposed. In his conclusions it would seem that ALMKVIST is still inclined to favour a phase or period progress of the disease. In place of the established division into three stages he now proposes a classification on a real pathological basis into four stages.

1 Initial or humoral stage when the spirochetes are in the blood (the disease is held to be constitutional from the outset) and other fluids and in the chancre. In this stage therefore are included the former primary and secondary periods of Ricord with chancre, fever, splenic enlargement, albuminuria and so forth.

2 Hematogenous syphilis. All the organs and tissues especially the lymph glands are now invaded by the spirochetes conveyed to them by blood or lymphatic channels. (It seems to us that this phase on the author's own showing is practically the same as the preceding.)

3 Scrupiginous or creeping syphilis. From a former infiltration as a focus, the spirochetes creep or insinuate themselves into the interstices of tissues in their neighbourhood initiating visible cutaneous changes and hidden transformations at a deeper level. Clinical examples of the former are the old tertiary circinate syphilide the condylomata and various forms of mucous occurrence—gummatous syphilide of the scalp pustular syphilides and gummatous which may be either superficial or deep.

4 Late degenerative syphilis in which are included all the various forms of cerebro-spinal lues—tabes G.P.I. and so forth—and the vascular lesions which develop in the walls of the larger blood vessels.

The new conception excludes such theories as the allergy of von Pirquet as applied to syphilis and according to ALMKVIST renders the three-stage doctrine of RICORD no longer tenable. Time will show whether these elaborate histological studies will prove a sufficient reason for so radical an alteration as is proposed especially in view of the fact that on the author's own showing phase 2 differs very little from phase 1. There can be no doubt however that that histological approach is one to which insufficient importance has been attached in the past and that the new ideas elaborated on this foundation by ALMKVIST will materially assist the labours of those engaged on the many problems of prognosis and treatment in all parts of the world.

IS PASTEURISATION HARMFUL?

It remained a very good beverage but it did not remain milk.

THUS LORD CREANWORTH in the Lords debate on pasteurisation reported in our last issue his opinion was forcibly supported by the Bishop of Norwich when the debate was resumed (see p. 1166) and is widely shared in the medical profession. But how far is it justified? Of the published evidence very little is convincing and much is contradictory. In elaborate experiments¹ at the National Institute for Research on Dairying rat families tended to die out on a diet of sterilised milk (and biscuits) while those on pasteurised milk showed some inferiority including signs suggesting deficiency of vitamin B₁. Such results however require very cautious application to human nutrition and it will be easier to form a judgment from the more comprehensive inquiries lately made at the same institute and at the Rowett Institute on behalf of the Milk Nutrition Committee which was established in 1934 with Lord Astor as chairman. The object of these inquiries² has been to determine the effect of commercial pasteurisation on the various constituents of milk and also to decide whether a pint of pasteurised milk is equal to a pint of raw milk from the nutritional standpoint. Their answers³ are that the changes caused by pasteurisation are not serious. Thus moderate heat does not (as has been alleged) affect the nutritional available ilot of the calcium and the phosphorus or the biological value and true digestibility of the nitrogen. Neither vitamin A nor its precursor carotene is damaged by pasteurisation. There is some loss of vitamin B₁₂—probably in the B₁ fraction—and about 20 per cent. of the vitamin C disappears if (as is usual) the milk has been exposed to light before heating. The committee does not propose to discuss the bearing of these laboratory results on human nutrition until it has published complementary observations on calves and school children. But they already show that milk suffers no damage by pasteurisation that is important compared with the risks of drinking it raw.

¹ *Brit. Med. J.*, 1936, 2, 762 and *Holling J. Lancet* 1935, 1, 66; 1936, 1, 113; 1936, 2, 762.

² *Milk and Nutrition Part I: Effect of Commercial Sterilisation on the Nutritive Value of Milk as Determined by Laboratory Experiment 1937*. Obtained from the National Institute for Research on Dairying, Shinfield, Reading, 11, 67, 72, 62 by post 2s.

ANNOTATIONS

PERSPECTIVE AND POISE IN PRACTICE

PERSPECTIVE—defined by Webster as the capacity to view things in their true relations or relative proportions—was the text of the annual oration delivered before the Medical Society of London last Monday by Dr R A Young. He said that his interest in perspective as applied to medical problems had been stimulated many years ago by the assessment of a distinguished physician by one of his pupils, himself a man of great practical ability. The pupil had summed up the teacher, for whom he had a real admiration, as having "very wide range but no perspective" a man, that is, whose standards of the relative importance of details were often faulty. His opinion on a case was learned but unhelpful in practice, he could not see the wood for the trees. In medicine as an art, said Dr Young, we want an horizon and the idea of a vanishing point, or at any rate a point of focus. He dealt in turn with perspective in anamnesis and examination, in diagnosis, in prognosis, and in treatment, ending with some wise comments on the value of poise in a physician. Only an "I," he declared, distinguishes poise from pose, but it is a capital "I," for while the poseur is an egotist, the man with poise is usually a philosopher and often an altruist. Dr Young had but little praise for the physician who concentrates at once on the establishment of what appears to be an obvious diagnosis, neglecting the routine review of all the systems that may reveal an essential if unexpected feature. Specimens, including human ones, are best surveyed under the low power of the microscope to get a general impression, before using the high power to focus details and refinements. In diagnosis also it is essential to remember the variations in interpretation of observed data. Too often an attempt is made to fit subsequent developments to the original diagnosis, even if they seem to contradict it, instead of starting again, regarding the problem as a fresh one, and looking at it from a different standpoint. A building situated half-way up a hill looks very different when seen from above and from below, everything depends on the point of view. A double or composite diagnosis in a difficult case is always suspect—like a picture with two horizons it is usually out of drawing.

In Dr Young's experience, physicians with great experience of post mortem work rarely make "tall" diagnoses. Knowledge of the distribution of the effects of disease tends to increase clinical acumen and the modern tendency in aspirants to hospital posts to escape a period of apprenticeship in routine post-mortem work is, he finds, to be deplored. Progress depends upon many factors, some capable of statistical expression, others almost imponderable. The individual experience of the practitioner is liable to influence his opinion more than any numerical statement of the probabilities based on figures. That it is wise to remain hopeful even if the outlook is grave, and if possible to infuse that hopefulness into the patient and those around him, is a lesson which Dr Young learnt from his seniors, notably Dr G F Still and Sir James Goodhart. Thus Dr Young has confirmed for himself, and passes on the knowledge with conviction. Even when faced with an obviously lethal disease, for example, malignant disease of the bronchus or mediastinum recognised at a time when eradication or even prolonged arrest is improbable, he has been impressed with the fact that the patient rarely asked a direct question. He

suspects his fate but does not want to have his suspicions confirmed.

Among the orator's sagacious precepts the following are noteworthy. The reminder that there are fashions in treatment is timely, the three "good remedies out of fashion" (antimony, apomorphine, and aconite) quoted by Dr Young, using only the first letter of the alphabet, suggest that the list might reach formidable dimensions before one reached the last. In the choice of new remedies he noted the danger of mistaking enthusiasm for experience, a danger to which the specialist without general knowledge is peculiarly liable. It is still true that they that are sick need a physician, that is, one person in charge of them even though he calls in specialised help in diagnosis and treatment where necessary. In the medical curriculum the specialised teaching and examination now in vogue in all departments needs overhauling and close scrutiny with a view to simplification. The paradox, that whereas the doctor as an individual is trusted, the medical profession as a whole is not in great favour, is attributed by Dr Young partly at least to our traditional refusal to advertise, and is to this extent irremediable without the loss of something far more valuable than popularity. In time the public may learn to understand that it is for their protection rather than for the physician's that the code of reticence has been developed.

SURGERY IN OLD AGE

THE ageing of the population, consequent upon a declining birth rate and an increasing expectation of life, will inevitably have its effect in many economic and social aspects of life. Not least will be its reactions on the practice of medicine. Obstetricians and paediatricians must be increasingly affected by the reduction in the number of births and of children, the physicians may expect an increase in the incidence of the degenerative diseases, of cancer and of diabetes, and the surgeons a general increase in the demands made upon them, though probably not equally distributed among the various surgical specialties. There is a popular belief that advanced age is a strong argument against operative treatment, and if in the future an increasing proportion of old people is to be the material upon which the surgeon must work it is clearly important to know how far there is justification for that belief. Starting from these tenets, Dr Barney Brooks, of the department of surgery in the Vanderbilt University School of Medicine, Nashville, Tennessee, has made a study of the results of operations performed in that hospital during 1926 to 1935 on 287 patients over 70 years of age.¹ All of these patients except two had been traced until the date of death or to 1936. The results he reaches are interesting. Of 172 operations carried out at ages 70-74 years, 17, or 9.9 per cent, resulted in death in hospital, of 84 carried out at ages 75-79 there were 13 such deaths, or 15.4 per cent, and of 37 at ages 80 and over there were 6 deaths, or 16.3 per cent. Surgical diseases in these high age-groups are clearly associated with a relatively high fatality, but from the protocols of the conditions and causes of death in the patients who succumbed, which are given in detail, Brooks concludes that deaths which could be reasonably attributed to the operative treatment are remarkably infrequent. In other words, increasing the proportion of patients in the higher age groups would undoubtedly increase the

¹ Ann Surg April 1937 p 451

hospital mortality rate but should not increase the hazard of operative treatment. Further evidence is afforded by those groups of patients in which operation was undertaken solely for the relief of some distressing symptom which presumably would not necessarily decrease life expectancy—i.e. reducible hernia, cataract, tic douloureux, gall bladder disease without gangrene or perforation and benign abnormalities of the rectum. There were 90 such cases with only one death from coronary occlusion on the seventh day after operation. Most hospital deaths fell in the *genito-urinary* and abdominal operative groups, the results with the latter being the most discouraging though none of the deaths could be directly attributed to the operation. One death has a particular bearing on the subject of the paper. The patient was first seen in 1925 with gall bladder disease but because of age, hypertension and cessation of symptoms operation was not advised. The attacks recurred until 1927 when operation was unavoidable but the gall bladder was then found ruptured into the duodenum and the patient died. Given a proper technique for handling sick old people—an atmosphere of optimism, precautions against exposure to acute respiratory infection and pre-operative treatment for existing disease of the heart and kidneys—Brooks finds no strong argument against operations in old age.

THE ROCKEFELLER FOUNDATION

We have recently been reminded of the benefactions of the Rockefeller Foundation by a resumption of their policy of making travelling fellowships available for medical men and women in this country on the recommendation of the Medical Research Council. Since 1915 a sum of nearly four million pounds has been spent on fellowships in various subjects all over the world. In a review for 1936 Mr Raymond B. Fosdick, the president of the Foundation, makes it clear that fellowships valuable though they are, form but a small part of its activities. The Foundation which has been in existence since 1913 has for its aim the promotion of the well-being of mankind throughout the world and in support of this ambitious programme it has an annual income of some £2,300,000. This vast sum is expended in financing research about two thirds being spent in the U.S.A. and the remainder in all parts of the world. The subjects chosen are those which in the opinion of the trustees are likely to be of benefit to mankind as a whole and include investigations into problems of public health, medicine, natural science, the social sciences and the humanities. In general the Foundation acts by financing existing institutions but in the realm of public health it undertakes research on its own account, appointing both laboratory and field workers and concentrating its attentions on those non-preventable diseases which offer reasonable prospects of being made preventable. In 1936 investigations were in progress in the U.S.A. and some 41 other countries into yellow fever, malaria, yaws, schistosomiasis, rabies, influenza and the common cold. In medicine the Foundation's workers are mainly engaged on the problems of mental hygiene as being, says Mr Fosdick, the most backward the most needed and potentially the most fruitful field in medicine to-day. Some £339,000 was expended in this direction in 1936 including grants to the Calton Laboratory and the Maudsley Hospital in London. Mr Fosdick also remarks and one may well agree with him that if a foundation is looking for immediate results the field of mental hygiene is not the one to enter. The

natural sciences are represented in the Foundation's programme by experimental biology. For research especially in genetics, endocrinology and on the enzymes grants of £285,000 were made in 1936. The social sciences and the humanities which receive a very small share of the world's expenditure for research in general received grants of £207,000. Since 1933 the Foundation has taken under its wing 151 scholars dismissed for political reasons from their posts in Germany and has contributed £110,000 towards the salaries of these unfortunates who have found employment elsewhere.

FAT EMBOLISM

The fat of the body exists as an emulsion of very fine particles in the plasma and as deposits of coarser substance in subcutaneous tissue around the kidney and in the marrow. It is theoretically at least possible for trauma to release the depot fat from its encapsulation and lead to its absorption into the lumen of damaged blood vessels (veins). It has been considered likely that the veins of the Haystack systems being held patent by their bony surroundings, are particularly suited to injection with fat emboli. There are certain practical difficulties in accepting this explanation. The first is that for fat embolism to occur it is not essential that the bone should be broken. Manipulation of old contracted rheumatoid joints has been followed by death and autopsy has shown extensive pulmonary fat emboli. Even in the cases—much the most numerous—in which there is a fracture the severity of the lesion bears no relation to the production of the condition. The only fact about fat embolism that seems to be well established is that in its severe form it is always the result of trauma received before death. This conclusion was reached by Vance in 1931¹ as the result of an investigation of 246 autopsies. A slight degree of fat embolism may be present in non-traumatic cases but is probably not of clinical importance. It is as a sequel to fractures of the long bones that most cases of fatal embolism have been recorded and the natural assumption has been that the emboli are derived from the fat of the marrow. Watson² records a fatal case which occurred in conjunction with a serious injury—a compound fracture of the tibia—that required an emergency operation; there was comparatively little comminution of the bone. Other cases have been reported following simple fractures. Another difficulty in accepting the bone marrow as the source of the fat is that the amount of fat available in the medullary cavity of a long bone probably is insufficient to cause any serious degree of fat embolism. The mechanism of the absorption of the fat—whether by suction into the veins or by pressure from the congested tissue—is also a matter of debate.

Watson notes that the anaesthetic was not an ether one and that a considerable quantity of ether was administered; he suggests the possibility that the ether may dissolve the fat of the blood plasma which may then be precipitated by evaporation of the ether in the lungs. A further suggestion made is that the products of tissue destruction circulating in the blood may break up the fat present in the plasma, a very finely divided suspension and cause it to form particles large enough to block the capillaries. However, formed the fat emboli seem to pass first to the venous thence to the right side of the heart and so to the pulmonary circulation. Across the fat to

the systemic circulation is more difficult to explain. It may traverse a patent foramen ovale, or it may actually pass the barrier of the lung capillaries.

Two main clinical types of case are recognised in the pulmonary type the first symptom may be precordial pain, or a feeling of constriction round the chest, a cough develops, the sputum being often streaked with blood, and moist râles are heard. Occasionally the progress is very rapid, with acute œdema of the lungs, more often it is gradual and at first broncho pneumonia may be diagnosed. The cerebral type of embolism tends to mimic delirium tremens. Death is by coma. Certain organs such as the kidney seem to be unaffected by the fat in the capillaries, in the brain the grey matter is not seriously affected, but hæmorrhages are found in the white matter, with areas of necrosis and of inflammatory reaction. Fat appears in the sputum and in the urine. Pyrexia is usual. The symptoms occur early—i.e., within two or three days of the accident or manipulation. In Watson's case pulmonary and cerebral symptoms were combined. The first symptom was cough and "rusty" sputum, precordial pain followed, and twelve hours later the patient was comatose. Apart from avoidance of ether anaesthesia no very useful suggestions have been advanced for prevention of fat embolism. Once the condition has developed there is no generally accepted method of treatment, though various measures have been recommended.³ The condition is not necessarily fatal.

OXFORD MEDICAL GRADUATES AND THE UNIVERSITY APPEAL

At a meeting of Oxford medical graduates recently held in London to consider how they might best assist the Oxford University appeal, the opinion was expressed that many medical graduates would like to be associated in any contribution which they might make towards the appeal. It has therefore been arranged that a special fund will be opened to include the contributions from all medical graduates who may so desire it, the names of individuals being of course retained. It is felt that, in this way, the medical graduates of Oxford will be able more adequately to express their gratitude to their University and their desire to come to her assistance. Sir Farquhar Buzzard, president of the Oxford Graduates' Medical Club, writes in the following words of such a combined effort on the part of Oxford medical graduates—

'So long as the university was devoted in the main to the study of the humanities she was sufficiently well endowed to supply the books and the teachers necessary for these subjects, but during the last 70 years she has been obliged, in order to keep pace with modern developments to spend more and more money on education and research in scientific and sociological branches of learning with the result that she has now found herself unequal to the consequent financial burden. We medical graduates recognise perhaps better than others, how inevitable these expenses are if any institution is determined to fulfil its obligations in contributing to the advance of knowledge and in keeping its place among its rivals. As undergraduates we were apt perhaps, only to regard our colleges as our creditors as graduates we cannot forget what we owe to our university for affording us the opportunity of sitting at the feet of men like Henry Acland, Burdon Sanderson, Arthur Thomson, Francis Gotch, Georges Dreyer, William Osler, and Charles Sherrington—to mention only a few of those to whom we must always remain deeply indebted. Now is our opportunity to show that we are not forgetful of what our old university

did for us in our younger days and to give every assistance in our power to continue her great work for those who are succeeding us. Lord Nuffield, with no such obligations as ours, has endowed with unrivalled generosity a new school of medical research, and, recognising that this must increase rather than decrease the university's financial responsibilities, has already given £100,000 in response to her public appeal for money. The least we can do is follow this generous and far-sighted example to the best of our abilities and resources."

Sir Farquhar backs his views in practical manner by an offer to start the combined effort of the Oxford medical graduates with a donation of £50.

POST-MORTEM FINDINGS IN KENYA

A VALUABLE pioneer effort has been made by F. W. Vint¹ in summarising the findings in 1000 consecutive post mortems on bodies of natives of Nairobi, Kenya Colony. Pneumonia was found to be the most frequent cause of death, accounting for 298 out of the 1000. The right lung was attacked most commonly, usually the upper lobe. Only 6 of these patients were under ten years old. Tuberculosis was the next in order of frequency, the lungs being affected in 94 per cent of the 132 cases. A hundred deaths were ascribed to septicæmia and toxæmia. Only a few (26) deaths were due to malignant disease, primary cancer of the liver being rather frequent (8). Spleens were found to be large and fibrotic, whether the cause of death was malaria or not. The interesting conclusion reached by the author—namely, that infective disease tends to be septicæmic among the natives owing to blockage of the reticulo endothelial system and diminished kidney function—would seem to demand further experimental and histological evidence, his article should stimulate work on this important subject.

TARSAL SCAPHOIDITIS

Smets² draws a distinction between Köhler's disease proper and Köhler's disease with complications, the distinction being that only those cases that are complicated give rise to symptoms. His contention is that the radiographic appearances characteristic of Köhler's disease are in fact variations of normal ossification. The condition shows a strong familial tendency and has been observed in uniovular twins, thus among triplets the uniovular pair were affected while the other escaped. The case is quoted of a doctor whose son had Köhler's disease with symptoms and whose daughter on radiography proved to have similar changes without symptoms. Many cases have been discovered accidentally during routine examination of the foot for other causes—such as a search for foreign bodies, or a fracture—and Smets emphasises once more the fact that at least 30 per cent of cases are bilateral, though the condition may be painful only on one side. Furthermore, he draws attention to the frequent association of Köhler's disease with identical changes in the patella. While not denying that an infective process such as tuberculosis may give rise to similar appearances, Smets mentions one or two interesting cases in which a tuberculous scaphoid on one side, confirmed by the formation of a cold abscess, with an X ray appearance suggestive of Köhler's disease, was associated with typical changes, without symptoms in the other foot. Here it is possible, he suggests, that the tuberculous disease was an added infection. He discards trauma entirely as an important cause, but

³ Clark, G. Norman (1933) *Lancet*, 2, 77

¹ *E Afr med J* February 1937 p. 1.
² Smets, W. (1936) *J Chir Brux* 7, 377

suggests that the scaphoid going through this variation of normal ossification may perhaps be more vulnerable at a certain stage and therefore more susceptible to the influences of minor traumata; hence the symptoms.

THE CAPITATION FEE

THE Panel Conference having last year declared that £8 is too small a capitation fee for insured persons and the Minister having said he thinks it may well be too much arrangements have now been made for arbitration. The arbitrators constituted as a court of inquiry are Lord Amulree (chairman), Mr Thomas Howorth and Mr D. H. Robertson with Mr E. H. Phillips of the Ministry of Health as secretary. Their task is to advise what if any alteration should be made next January in the capitation fee having regard to any changes which may have taken place since 1924 in the cost of living the working expenses of practice the number and nature of the services rendered by insurance practitioners to their insured patients and other relevant factors. The inquiry is to proceed on the assumption that employed persons under 16 years of age will by that time be entitled to medical benefit and the arbitrators' findings should help to resolve the conflict of opinion that has arisen from the Minister's belief that a substantially lower fee should be paid for children than for adults.

MENINGOCOCCAL MENINGITIS TREATED WITH SULPHANILAMIDE

SULPHANILAMIDE as *p*-aminobenzenesulphonamide is conveniently called has been proved lethal to meningococci¹ and account on its use in cerebro-spinal fever are eagerly awaited. A small series of cases now reported from Baltimore is encouraging so far as its good. Schwentker, Gelman and Long² have treated 10 patients with meningitis and 1 with meningococcal septicaemia—the series being to all intents and purposes consecutive—and are able to record recovery in all but 1 of them. They used a physiological solution of sodium chloride containing 0.8 per cent of sulphanimide and they gave it by intraspinal and subcutaneous injection. They began by withdrawing cerebro-spinal fluid and replacing it with the sulphanimide solution the amount injected varying from 10 to 30 c.c. and usually being 5 to 10 c.c. less than the amount of fluid withdrawn. A larger quantity of the solution was then given subcutaneously they injected about 100 c.c. for each 40 lb (18 kg.) of body weight. Both intraspinal and subcutaneous injections were repeated every twelve hours for the first two days and once daily thereafter until definite improvement was evident. Sometimes the cell count of the cerebro-spinal fluid fell rapidly and progressively; sometimes it remained high for a few days and descended precipitately. In no case could organisms be found in the C.S.F. more than three days after treatment started. No untoward effects were noted the subcutaneous injection gave no more reaction than would be expected with normal saline and there were none of the signs of systemic reaction sometimes reported after sulphanimide such as rashes methaemoglobinuria or sulphamoglobinuria.³ Schwentker and his colleagues are rightly cautious in their con-

clusions but in their 11 cases they found the therapeutic response quite comparable to that which usually follows treatment with specific antiserum and they point out that sulphanimide has the substantial advantage over serum that it does not cause irritation like a foreign protein.

RISKS OF ENDOTRACHEAL ANÆSTHESIA AND OF EXPLOSIONS

A CONTROVERSY has been going on in the last two numbers of the *British Journal of Anaesthesia* over the possible dangers of nasal endotracheal methods. Dr Massey Dawkins in January asserted that bacteria lie within the external nares whence they are normally removed by ciliary action. The nasal catheter he thinks may carry these organisms directly to the trachea where they may not be effectively dealt with. He quotes two fatal cases of broncho-pneumonia following endotracheal anaesthesia which he believes illustrate and support his contention and he also produces statistical evidence. His opinion is that administration of an endotracheal anaesthetic for every case is becoming too common though he does not deny that the method is certain easily controllable and admirably suited to the needs of the surgeon and of the anaesthetist. The edgels in defence of nasal endotracheal methods were taken up in the April number and wielded with vigour. Dr Ivan Magill who was the originator of this method and has employed it since 1910 has not yet met an instance of pulmonary complication that could justly be attributed to it. He holds that any bacteria present in the nose are probably already present in the trachea too. He agrees with Dr Dawkins that indiscriminate use of the endotracheal method by all and sundry whether indicated or not, is to be deprecated. Mr W. A. Mill suggests that the best way to avoid lung complications is to avoid operating until some time has elapsed after any acute infection of the upper respiratory tract. Cocainisation of the nares the use of a small tube an anaesthesia deep enough for insertion of the tube without spasm of the cords and lubrication of the tube are features of the technique which other writers to the journal regard as important.

Another paper in the April number by Mr I. H. Coste F.R.C. deals with the cognate question of fire and explosion in operating theatres. It is a valuable contribution because other investigators have usually given primary consideration to the source of the spark or flame which starts an explosion. Mr Coste examining the chemical aspect has experimented on the explosibility and inflammability of a number of the commonly employed inhalation anaesthetics. He gives numerous details and as regards ether draws the important practical conclusion that explosions due to dangerous concentrations of ether in the air of an operating theatre are most unlikely if the possible source of ignition is a foot or more above the floor level.

CEREBRO SPINAL RHINORRHOEA

CEREBRO SPINAL rhinorrhoea is rare in a person condition since it carries with it the danger of meningitis. Diagnosis is easy if the point is not forgotten; profuse flow or free dripping of a clear fluid which does not stain on the handkerchief is a characteristic sign confirmed when chemical examination of the fluid shows absence of albumin and mucus and the presence of glucose. The cases fall into three groups: (1) those due to injury (2) those

¹ Huttel, G. A. H. Gray, W. H. and St. Johnston, D. (1936) *Lancet*, i, 1, 80. Brown, H. and J. H. and 1937, p. 16.

² Schwentker, F. J., Gelman, H. and Long, J. H. *J. Amer. med. Ass.* April 24th 1937, p. 140.

³ See paper by Talon and Eaton on p. 119 of our present issue.

which follow operation on the frontal sinuses or ethmoid region, and (3) those which occur without previous traumatism. On May 7th, in a communication to the laryngological section of the Royal Society of Medicine, Prof. Hugh Cairns described eight cases illustrating these various groups. Two were the result of airplane crashes, where the face had come into violent contact with the instrument board, causing fracture of both walls of the frontal sinus. Mr Cairns suggests that such accidents may become increasingly frequent. In both subjects rhinorrhœa ceased after a few days and recovery followed. In these cases early operation is contra-indicated, for severe shock is usually present as well as infected wounds of the neighbouring regions. In other cases rhinorrhœa may not appear for several weeks, if it persists, there is considerable risk of meningitis through infection from the nose, which may occur at any time as the result of a cold. It is therefore wise to operate, expose the floor of the anterior cranial fossa, and close the rent in the dura by suture or by a fascia lata graft.

If a flow of cerebro spinal fluid is seen during an intranasal operation on the ethmoidal region, it means that the dura mater, which is particularly thin and adherent here, has been torn. The danger of fatal meningitis is extremely grave, and the safest course is to open the anterior fossa at once and repair the wound. Mr W. M. Mollison pointed out, in the ensuing discussion, that injury to the dura during external operations on the frontal sinus and ethmoids is less liable than injury during intranasal operations to be followed by meningitis.

Cerebro spinal rhinorrhœa in the absence of traumatism is sometimes associated with hydrocephalus or with cerebral tumour, and may cease after removal of the latter. Sometimes it is more truly spontaneous, and is then probably due to congenital defect in the region of the cribriform plate. St. Clair Thomson first called attention to this condition in 1899, when he had seen three cases, all ending fatally, and remarked that the condition does not appear to be amenable to any treatment.¹ In view of the serious risk of meningitis, probably the safest course is to expose the anterior fossa and close the gap with a graft, especially where a deficiency in the bone is shown by X-ray examination.

ROYAL SOCIETY OF MEDICINE

ON May 10th the Royal Society of Medicine gave a reception at the Society's house to celebrate the Coronation and to entertain medical men and their wives from overseas. The guests were received by the president, Sir John Parsons, F.R.S., and Lady Parsons in the library. A film show in the Barnes Hall was preceded by a short speech in which the president extended the hospitality of the Society to all visitors and welcomed guests. Among the official guests were Mr James Davies, Commissioner for Newfoundland, Sir Thomas Barlow, president of the Royal Medical Benevolent Fund, Sir Edward Mellanby, secretary of the Medical Research Council, and the presidents of many of the sister medical societies which have their headquarters in London, there were also visitors from Australia, New Zealand, Canada, Africa, India, Malta, New York, Straits Settlements, Palestine, and Greece. By the courtesy of the General Post Office two excellent films were shown. The first, "Weather Forecast," demonstrates how from meteorological data collected from all over

Europe a gale is forecast, one follows the "gale warning" through all the departments concerned and finally sees in outdoor scenes the gale rise and pass away. In the second, "Night Mail," are recorded the various stages of the mail as it flies north through the night on a special express, and there is an exciting moment when the mail from Holyhead nearly misses its connexion. A third film "Galatea," by Miss Lotte Reiniger, was a clever silhouette made up with pieces of paper and cardboard, the subject matter of which had been freely adapted from the classics.

An exhibition of historical interest followed, consisting of tableaux depicting medieval alchemist shops, and the progress of medical science through the centuries. The tableaux were lent by the Wellcome Historical Medical Museum as were a collection of figures of the patron saints of medicine, including Saint Sebastian, the patron saint of undertakers. Altogether a successful and entertaining evening.

THE HONOURS

THE Coronation honours list is for the Empire as well as for this country, and it brings recognition to many whose work is done in out of the way places. Medicine in England gains another able exponent in the House of Lords in Dr Christopher Addison, whose long parliamentary service and tenure of several ministries are fittingly recognised by a peerage. Sir Cuthbert Wallace receives a baronetcy, Dr Edward Mellanby is created K.C.B., Dr G. F. Still and Sir John Atkins become knights of the Royal Victorian Order, and Dr A. F. Hurst, Prof. Beckwith Whitehouse, and Dr A. E. Horn are among the new knights bachelor. To these and the other members of the profession named on p. 1204 we offer warm congratulations. In addition, there are many associated with medical work whose decorations we are also glad to note. Mr S. P. Vivian, the Registrar General, receives a knighthood. Mrs. Ellen Pinsent, late senior commissioner of the Board of Control, is made a dame of the Order of the British Empire, and the nurses honoured include the matrons of St. Bartholomew's and King's College Hospitals, Miss Helen Dey and Miss M. A. Wilcox, who become officers in the same Order.

THE next session of the General Medical Council will open on Tuesday, May 25th, at 2 P.M., when Sir Norman Walker, the president, will deliver an address.

ON March 6th we reviewed the report of the Select Committee on Medicine Stamp Duties which proposed the taxation of a large range of preparations recommended or advertised as curative or preventive of illness. This report is now published by H.M. Stationery Office with the minutes of evidence and an index. The price is 7s. 6d.

THE centenary celebrations of the Liverpool Medical Institution will be held on May 30th and 31st and June 1st, when honorary memberships will be conferred on Sir Cuthbert Wallace, Sir Norman Walker, Sir Farquhar Buzzard, Sir Ewen Maclean, Prof. W. Fletcher Shaw, Sir James Barr, Mr Thurstan Holland, and Mr Frank Paul. Prof. R. E. Kelly will deliver a presidential address on surgery a hundred years ago. During the meeting the Hugh Owen Thomas and Robert Jones memorial library of orthopedic surgery will be opened and afterwards Mr W. Rowley Bristow will give the Hugh Owen Thomas memorial lecture.

¹ Diseases of the Nose and Throat. Third edition. London 1926. p. 213.

SPECIAL ARTICLES

EMPIRE CONFERENCE ON THE CARE AND AFTER CARE OF TUBERCULOSIS

(Continued from p. 1181)

Lord HORDER and Lord ALLEN OF HURTWOOD presided over the sessions of this congress on May 4th. Lord Horder said that despite the advance made against tuberculosis the mortality remained far too high. Lord Allen referring to the Papworth experiment said it interested him because of the humane-ness and sympathy it brought into administration. One of the major needs of democracy he thought was emphasis upon the humane.

TUBERCULOSIS IN THE BRITISH ISLES

Various papers were read describing work being done in the home countries.

Dr D. A. POWELL (principal medical officer Welsh National Memorial Association) said that the fall in the tuberculosis death rate in Wales though substantial had not been as great as in England. This fact must be connected with the national characteristics of the Welsh such as the intense conservatism of their social habits, the closeness and tenacity of their family relationships and their fatalistic outlook. In Wales broadly speaking families were either free from the disease or were riddled with it and it ran in families because of excessive opportunities of infection rather than because of hereditary lack of resistance. So closely woven were town and country that in dealing with a chronic infectious disease such as tuberculosis Wales had to be looked on as a unit. The main services undertaken by the Association included: (1) the provision of institutional treatment in sanatoriums and hospitals; (2) the provision of dispensary or out-patient treatment for which purpose Wales was divided into 14 areas which disregarded when necessary local government administrative boundaries; (3) the establishment of clinics for the continued treatment and supervision of surgical cases; (4) the establishment of an educational department; (5) after care; and (6) the maintenance of a central research laboratory. The liaison between the institutional and the dispensary sides was extremely close—administratively through the head office and the principal medical officer and clinically through interchangeability of staff, the appointment of tuberculosis officers as visiting physicians, the appointment of medical officers of surgical institutions as officers in charge of the surgical after care clinics, the carrying out of joint investigations such as that into coal miners' lungs and the holding of periodic staff conferences. The Welsh National Memorial Association was unique in that it combined the advantages natural to a voluntary organisation with those in operable from a State and rate-aided service.

Dr ERIC WATT (Department of Health for Scotland) said that in Scotland there was now roughly 1 bed per 1000 of the population but even now there was often a waiting list. A great deal had been learnt about the problem of tuberculosis since the inauguration of official schemes. It was important to preserve a critical outlook upon all activities engaged in the campaign.

The MARCHELONNE ST. ANTHONY gave an account of the formation of the Women's National Health Association in Ireland in 1907 and the organisation of a travelling anti-tuberculosis exhibition which

resulted in the establishment of a network of local branches of the association and a steady decrease in the tuberculosis death rate. The rate recorded for 1936 was the lowest yet reached (1.13 per 1000) and was approximately 59 per cent less than that for 1904. With a government grant of £25,000 two sanatoriums were established near Dublin and Enniskillen. It was not until 1929 however that they were able to make a start by establishing the Peamont Industries and adopting the Papworth plan of working for the establishment of a village settlement. Lady Aberdeen spoke of the remarkable change of atmosphere which had been brought about during these seven years—a change that had transformed the work.

Dr G. LIESANT COX (Lancashire County Council) described some of the measures for prevention and treatment that have been adopted in Lancashire. If treatment was over-emphasised, he said they would have a poor scheme and faulty control. The importance of prevention was seen when it was realised that some 60 per cent of adult pulmonary tuberculosis cases died within five years of coming under notice. The Lancashire scheme was built up on the principle of finding, isolating, educating and treating the adult positive case. Finding had to be done by notification and by active co-operation between family doctor and whole-time municipal or State doctor. Isolation was carried out by keeping infective patients in hospital as long as they would stay. In Lancashire they had 680 beds, which was just enough for their 8.5 pulmonary deaths. Education was carried on by teaching in schools (incidentally all schools ought to be open-air schools) and teaching by the tuberculosis medical service in hospitals, sanatoriums and homes of the patients. Treatment included all modern medical and surgical methods. It was always free and Dr Cox considered that this policy had helped to give them their reduction in incidence and fatality. Schemes for the care and after-care of the patient were an important part of treatment and were most highly developed in the village settlement.

THE HOSPITAL AND THE VILLAGE SETTLEMENT

Dr L. S. T. BURRELL said that when tuberculosis was recognised either as a primary infection or as a reinfection the object of treatment was to make the lesion heal without spreading and it was in this stage that the hospital was valuable. It was impossible to over-estimate the value of an initial period of rest in cases of pulmonary tuberculosis. When the activity of the disease was arrested the function of the sanatorium would come into play. Secondly when the patient was so ill that he could do little or nothing for himself he should be in hospital not only for his own sake but also to prevent infection of others. The third great function of the hospital was as a centre for diagnosis. At the Brompton Hospital a large number of patients came mainly for this purpose and were subsequently drafted to the appropriate institution.

Dr I. B. McDONNELL (Preston Hall) spoke on the re-settlement of the tuberculosis ex-service man. From their early experience of the Preston Hall scheme they had learnt that for the success of any village settlement medical principles must take precedence over every other factor in the life of the community. Another important lesson they had learnt was that the leader of the various departments should be recruited as far as possible from the

tuberculous population The principles employed at Preston Hall were substantially the same as at Papworth. They now had accommodation for 300 patients suffering from pulmonary tuberculosis, and treatment of every kind was available. With regard to the purely industrial side, if the products were good and the price was right, there was no reason why trading in the open market should not be as successful in a village settlement as in any outside organisation. A recent Ministry of Health report (1932) had pointed out that a subsidy to a patient in a village settlement was more economic than allowing the patient and his family to be supported, entirely unemployed, from the public assistance funds. He had often wondered what the country would be saved financially by acting on a large scale on this dictum.

SURGICAL TUBERCULOSIS

Sir HENRY GAUVAIN said that in the vast proportion of cases conservative surgical tuberculosis treatment was the treatment of choice. Occasionally radical treatment was preferable, as for example in most cases of tuberculous disease of the knee joint in adults, where excision was very often indicated, both because duration of treatment was thereby shortened and danger of recurrence largely avoided, and also because the resulting disability was comparatively trifling, and indeed was often less than if protracted conservative treatment were employed. It might also be desirable for small tuberculous foci which could be readily and completely removed. In tuberculous disease of the spine and hip there was much controversy as to when fixation operations should be undertaken. In his own experience these operations were not advisable as a rule during active and progressive disease, especially in the presence of deformity, since deformity could nearly always be reduced or corrected during treatment. The treatment of tuberculous glands of the neck varied with the type of case, but usually a preliminary period of conservative treatment was useful, after which if necessary any hard glands remaining which were unlikely to be absorbed should be carefully excised. In tuberculous of the abdominal glands also conservative treatment was always the method of choice and operations avoided whenever possible. The Triboulet test he thought was sometimes a useful guide to the condition of the large intestine.

EXPERIENCES IN THE DOMINIONS

Dr R. J. COLLINS (Canadian Tuberculosis Association) said that in Canada they had no centralised—i.e., national—department of health. Each province built up its own schemes, agreeing in objectives but differing in methods. In his own province of New Brunswick special emphasis was being laid on better housing and diet, the establishment of numerous clinics, and adequate after care. Very little constructive work had so far been done in respect of housing, otherwise the advances made paralleled those in England. The introduction of travelling clinics had done a great deal. In 1928 survey work—group examinations—had been begun with the entry classes in the universities, and this had gone on to other survey groups. These plans were duplicated more or less throughout Canada. They had an average in Canada of 1½ beds per tuberculosis death. Saskatchewan had 2 beds per death, but the maritime provinces had less financial means. With the object of shortening hospitalisation and rendering the sputum negative there had been a great increase in artificial pneumothorax treatment and thoracoplasty, and at the present time some 20 to

50 per cent of the sanatorium population received some form of collapse therapy. There were 20 centres in New Brunswick alone for A.P. refills. The employment of ex-patients was very valuable. Occupational therapy the speaker thought rendered little service towards future employment. Vocational training could be made more effective if there was more diversity of subjects, and it should be supplemented by some scheme for the subsequent placing of the patient in sheltered employment. After care in Canada was a problem affecting some 10 per cent of the discharged patients.

Miss GLORIA LANGMAID (Canadian Association of Occupational Therapy) said that occupational therapy was now part of the equipment of every up-to-date sanatorium in Canada. It assisted young patients to adjust themselves to their new conditions, and aroused their interest in new directions.

Mr D. M. DEANE described the work of the Tubercular Soldiers' Aid Society, Adelaide.

Dr A. J. COLLINS (Commonwealth of Australia) said that notification of tuberculosis was compulsory in Australia, but the State was powerless if a man declared he could not afford to give up his work to undergo treatment. Unless financial assistance was available for their dependants, a certain proportion of tuberculous patients would not avail themselves of the necessary institutional provision. The public health officer should be empowered to insist on adequate treatment in every case.

At a subsequent session the Hon. FRANCIS GARA (Minister of Health, Tasmania) said that the principal difficulties in Tasmania lay in organisation, transport, and public apathy. Sometimes they had to take their people as far as 200 miles away from their homes and to put them in the central institution set apart for special treatment. The patient often rebelled at being transported so far, with the result that they had been dealing with a later stage of tuberculosis than could be found in centres where clinics could be readily located. The Government was about to establish a full time free medical service for people living in the remoter portions of the State. The medical officers were to be part of a central medical scheme run in conjunction with Tasmania's public hospitals, and were to be given frequent opportunities for refresher courses in the hospitals. A central sanatorium along modern lines was also in process of development. Where centres of population permitted, it was intended to adopt the British method of tuberculosis clinics, classification and ambulatory treatment generally. More ambulance units were to be installed to facilitate transport, health talks by radio were to be given, and elementary instruction in hygiene provided by the State schools. The speaker concluded by referring to the fundamental importance of guaranteeing to the public a pure milk supply.

INDIGENOUS RACES

Viscount GOSCHEN took the chair at the fifth session. He emphasised the importance of a free exchange of information.

Dr CHARLES WILCOCKS (Tanganyika Territory) gave the results of a five year investigation of tuberculosis conducted by him in Tanganyika inhabited by some 5,000,000 natives, mainly of Bantu origin. For the tuberculin survey the Mantoux technique was used throughout, supplemented by stethoscopic examination, collection of sputum if desired, and an X-ray examination of suspected cases. In 1936 such examinations 114 cases of definite tuberculosis were found, giving a crude rate of 11.5 per 1000.

In every place half or more of the adult population were positive to tuberculin, the rates for children being lower. Of X ray films of 100 unselected contacts 16 per cent showed definite tuberculous infiltration of the lungs. In a larger series of contacts who were tuberculin tested 83 per cent of all ages were positive, of whom some were contacts of non-pulmonary cases. The results of the survey suggested that continuous exposure to exogenous reinfection tended to produce first sensitivity then hyper-sensitivity and finally disease and if the highly allergic state was harmful rather than protective then the process might be a continuous one. The dominating factor was contact. The prognosis in native tuberculosis cases was usually bad. This might be due to late diagnosis, poor living conditions and diet or possibly to a racial predisposition to the disease perhaps increased by concurrent diseases and with better conditions and treatment an improvement might be looked for. The resistance shown by the infected natives proved that under most circumstances they could control their infection. It might take very little to increase that capacity for control so that a repetition of the experience of the North American Indians might be avoided.

Major General Sir CUTHBERT SPRAYSON (Indian Medical Service) said that the Indian population as a whole was more susceptible to tuberculosis than the population of Great Britain. There were also special difficulties inherent in the purland system and the early marriage of girls, while another peculiarity of tuberculosis in India was the large proportion of cases of primary abdominal tuberculosis. Infection from the bovine tubercle bacillus however was believed to be rare. The dispensary system of tuberculosis control in this country presupposed existing hospital or sanatorium accommodation for all the cases the dispensary might send but in India such accommodation did not exist. There was an urgent need for increased hospital accommodation by which the most essential link in the chain of case disposal would be achieved. There was also room for a tuberculosis settlement on the lines of Papworth—i.e. an institution receiving cases of all types with its own dispensary, hospital, sanatorium and factory. No such settlement had yet been established in India but if every Indian city with a population of 100,000 or more were to start a tuberculosis settlement a few miles outside municipal limits with accommodation and arrangement for expert treatment of patients of all types and with separate quarters for the families of those fit to resume work the speaker believed that a need would be met and the public health improved. Money should be raised mainly by public subscription rather than by government aid and by many small subscriptions rather than a few large ones.

Dr F. A. BENJAMIN said that a tuberculin survey by the Union Mission Sanatorium, South India, suggested that the infection even in the villages was widespread, the disease usually being of the acute rapidly developing type. In spite of the widespread infection and severity of type there was a surprisingly small amount of tuberculous disease in the area of the tuberculin survey. The fact that the type of disease met with was almost exclusively acute exudative might be due partly to auto-inoculation brought about by undue stress or unfavourable environment during a period of relative instability in tuberculosis immunity and partly to exposure to repeated small live doses of tubercle bacilli from outside. As many as 40 per cent of the patients gave a history of direct contact with tuberculous patients. Dr Benjamin urged that further research work should be under-

taken through surveys in different areas but controlled under a single control also that efforts against tuberculosis should not be wasted in a general broadcast type of propaganda but should be concentrated and directed to reach and educate the few among whom the disease is actually found and finally that efforts should be made to detect, treat and isolate those who were a serious source of danger to others.

Mr NORMAN MACLENNAN (Department of Health, Palestine) said that a tuberculin survey had been carried out amongst all sections of the Palestine population in 1934-35; observations were also made on tuberculin sensitivity rates in school-children 5-13 years of age. It was found that the Palestine rates were considerably less than half the figures given for London and for Leeds and it was likely that the process of tuberculation would increase in the near future. The immigrant adult Jewish population was however probably already tuberculated. Factors generally admitted to be operative in promoting the incidence and spread of tuberculosis existed in a large proportion of the population. These factors were uncontrolled infection, poverty, malnutrition, over-crowding, ignorance and insanitation. As far as the nomadic Bedouin in Transjordan were concerned both individual and racial resistance appeared low and the disease was often of the galloping variety. Bovine infection apparently played a negligible rôle in the production of the disease in Palestine.

Prof S. LYLE CUMMINGS presided over the last session of the conference.

Dr BERNARD MEYER, speaking on tuberculosis in New Zealand, said that Maoris contracted tuberculosis more easily than the New Zealanders of European descent and appeared also to have a lessened resistance to the disease so that the death rate was distinctly higher. The hygienic conditions under which the Maoris lived and their reluctance to adopt the necessary European methods made their treatment very difficult. An advance had however been made by the establishment of tuberculosis clinics in various parts of the North Island and a tuberculosis scheme was being organised which was expected to bear fruit in the near future. Dr H. B. Turbott, medical officer of health at Hamilton, New Zealand, carried out in 1933 a thorough survey of a typical Maori country population and the knowledge gained resulted in the adoption of a care and after-care scheme over the same area covering about 4000 Maori population. The tuberculosis mortality in the demonstration area dropped to less than half between the years 1934 and 1936. And thus after three years' trial the scheme had proved sufficiently successful to recommend for adoption for Maoris throughout New Zealand.

Dr J. CAUCHI (Nigeria) dealt with tuberculosis in West Africa. Explaining that Nigeria had an approximate population of 20 million over an area of just under 373,000 square miles and that outside the municipal area of Lagos there were almost no qualified men in private practice—the actual available strength of the establishment in the country at any one time amounting to less than 100 medical officers—he said it was obvious that only a small minority of those suffering from disease could ever come to the notice of the medical organisation. It was then for unavoidable that their knowledge of the incidence of tuberculosis in Nigeria should be limited although the incidence was known to be high. In 1935 in the return of Government institutions tuberculous infections accounted for over 23 per cent of the total of 536 fatal cases of infection.

disease. The two main clinical groups of cases seen in Lagos were (1) those showing cavitation and surrounding fibrosis of the lungs, and (2) those showing multiple lesions of the various organs and tissues. In both groups the disease followed a steadily progressive course with little or no evidence of reparation or retrogression. It was thought possible that these two groups might be correlated to two different strains of *Bacillus tuberculosis*. If this theory was confirmed, it should have a bearing on practical methods of control. Tuberculosis had been made notifiable since last year for the whole of Nigeria, and cases were being reported from many of the hospitals. Lagos had been undergoing rapid urbanisation in recent years, and as house-building had lagged behind the increase of population over crowding had resulted, with its increased opportunities for infection. Town planning and housing improvements which were now being energetically carried out constituted sound lines of control. There was also some evidence of tuberculosis among cattle in widely scattered districts. There was thus ample material for tuberculosis research by clinician, laboratory worker, and public health officer as soon as the country could afford to add to its present much too limited staff.

The conference concluded with speeches from Dr A. D. PRINGLE, representing the Transvaal Chamber of Mines, and Dr G. M. C. POWELL, representing the medical services of Northern Rhodesia.

AN AMBULANCE IN SPAIN

LAST November we published a letter from Mr K. Sinclair Loutit describing the work of the Spanish Medical Aid Committee's ambulance unit at Grañen in Aragon. In December most of the personnel left for an area of greater activity and the following letter gives a further account of what they are doing.

"Here on the Madrid front we lead a very different sort of life. In the three months we have been here, we have established five different hospitals and treated, in round figures, 2000 wounded. Our function is that of mobile hospital to the XIV Brigade which means that we lead a very active life, often being compelled to pack up, transport, and re-establish the entire hospital in 24 hours. In the beginning we found this a well nigh impossible task, but now, with proper division of labour and systematised packing, we are beginning to look upon it as being all in the day's work. We are usually housed in large villas of fascist ownership which, with a little initiative, can be converted into excellent first-line hospitals. This is not always so, however, and in one case the choice lay between a baroque palace, the walls of which were festooned with cupids and saints chasing each other round with a fine disregard for the laws of hagiography, and a sixteenth century Alcaidia. We chose the latter because the rooms were larger and there were accessible water and some elementary sanitation. It was built round a most beautiful courtyard and among its amenities was a bar which between 4 A.M. and 7 A.M. was converted into an operating theatre—much to the surprise of some local inhabitants who dropped in for 'a quick one' at 9 o'clock. The public hall became our largest ward, every other part of the building being utilised, so that when we came to leave six weeks later, the place was wired for electric light, there was running water on the premises and the lavatories were up to normal English standards.

"We carry with us a carpenter, an electrician, and

a plumber, who in Spain are as essential as any of our personnel. They also confer a lasting benefit on any premises we occupy, thus when the line advances, the civilians reoccupying those houses find their last state better than their first.

"We usually arrive at the village that has been chosen for us—some 14 or 15 kilometres behind the firing line—in the small hours of the morning. Large convoys by day are too vulnerable to aerial attack. Our house, which has already been marked and is often enough Hobson's choice, has to be immediately prepared for the results of the dawn offensive, which will begin to arrive about 9 A.M. Three things are our first attention: (a) a working operating theatre, (b) a minimum number of beds, (c) a proper water supply. This is sufficient for the first rush and the rest can be completed in the subsequent 24 hours.

"We attempt to follow the same plan in all our hospitals. We start with a large reception room which can hold about 15 stretchers and the same number of ambulant cases. Here, as the cases arrive, a rapid sorting is performed by the reception officer and the wounded are dispatched to major or minor operating theatres, or, in cases of great shock, straight to the wards. He, too, is responsible for evacuations, dispatching those who can stand further transport farther back from the line. Here, also, any first-aid treatment is given, the pre-anæsthetic dopes, antitetanic, and anti-gas gangrenous sera, morphine, and, with the lighter cases, a very welcome cup of coffee and a cigarette. Next comes the operating theatre, or theatres. We have always found this a great problem. It is difficult to find a series of suitable and adjacent rooms to give our operating teams separate theatres. In the last two hospitals we have had to put all five tables in the one large room—this has proved an admirable arrangement and an economy in both material and staff.

"The theatre and reception room having been chosen, the rest of the house goes of necessity to wards, office, and kitchen. Our small sterilising room is in a way the most vital part of the hospital. We cannot rely on prepared dressings nor can we allow anyone else to do our sterilising, and so, for instance, every bit of gauze is cut and autoclaved on the premises. Our steriliser, an ex-R.A.M.C. orderly, kept hard at it keeping up the ever diminishing stocks.

"The whole organisation is designed on such a scale as to deal with about 120 cases daily, with 5 operating tables and 70–80 beds.

"Having settled the all important question of the hospital, the billeting officer has to house and feed some 50 personnel. Amongst our number are representatives of every European country—English predominating on the medical staff. This does not, as one might expect, result in a babel, for the war has produced its own language, a sort of trench Spanish. A little difficult for lengthy conversation with a Spaniard, but quite enough for a Czech and an Englishman to make each other understand.

"As we are so close to the line we cannot rely on uninterrupted or fixed hours of work. We have often had to work the 24 hours round and that under the difficulties entailed by air raids, failure of the light supply (here the grid system often works right up to the front line) and all the other accidents of war. A Belgian driver has now rigged up a very effective emergency lighting plant for the theatre out of salvage from car wrecks and a dynamo from a bombed garage, so now we can carry on with something better than flash lamps and candles.

For the sanitary service there is no rest. When our brigade is 'en repos,' we, although things are

naturally quieter, have a full day's routine work with medical (as opposed to surgical) patients, occasional civilian road casualties, routine inspections and inoculations. Then there is the checking up of stores from which arise those urgent appeals you receive (and we hope attend to at once) sent out by our London committee. Then the theatre staff are fully occupied in preparing dressings, manufacturing plaster bandages, repairing gloves and cleaning and adjusting instruments. During these brief rest periods each arm of the brigade tries to organise an evening's entertainment for the remainder of the service. First a musical entertainment followed by a dance—always described as a *Gran Bal*! As the women are naturally in the minority there being only eight English nurses and a few Spanish girls from the village there are no wall flowers and one sees such couples as a 6 foot Belgian regimental sergeant-major walking around with a 5 ft 4 in Polish dispatch rider. The order to move comes and back we go to some hard pressed sector.

The contrast between this and our former work on the Aragon front strikes one from every angle. At Grañen we were permanently established behind a stationary defence line. Spain was on the defensive. That line at any rate when we arrived there last August was manned by disorganised militia without unique command without concerted plan of action. All that has passed. And now eight months later we find ourselves behind a determined and disciplined army engaged in an offensive which stretches from the borders to the seas against a foreign fascist invasion. Thus *No Pasaran* has changed to *Nosotros Pasaremos*.

MEDICINE AND THE LAW

A Disputed Will

IN 1908 a Lancashire gentleman took to his bed complaining of influenza and malaise. He had a slight rise of temperature but did not appear to be seriously ill. In a few days, however, his illness took a serious turn and his doctor was summoned. The patient obviously had an acute abdominal emergency and diagnosis of a perforated typhoid ulcer was confirmed by a second opinion. He was given occasional doses of morphia—gr $\frac{1}{2}$ hypodermically—to ease his pain. In a day or two he died but a few hours before his death he was propped up in bed and signed a long will which had been prepared by his solicitor and by which he left his wife an annuity and the bulk of his fortune to his sons and their descendants. His daughter then only a few months old received only a small share of the testator's inheritance from his father. For various reasons she did not learn of the circumstances in which the will was executed until 1936. She then issued a writ against the executors alleging that the will was not properly executed because the testator when he signed it had not possessed sound mind, memory and understanding, that he did not know and approve of its contents and was delirious and comatose the day before and continued in this state with intervals of consciousness until he died, that he suffered a great deal of pain and distress, and died two hours after the execution of the will; that he gave no instructions for the will that it was not read over to him and that he could not appreciate or understand its meaning, effects, or contents, or form a rational opinion of his financial position or the claims of his family on his testamentary dispositions.

The action was heard before Mr. Justice Langton on April 22nd, 23rd and 27th. By good fortune

Dr. Walter Rigby, the testator's medical attendant and a witness of the will was able to give evidence of the circumstances. He said that the dying man's mental state was quite clear. There had been nothing to show that he knew it was his will but there was no doubt that he did know. Cross-examined he said that perforated typhoid ulcer was very rare but almost certain to cause death in two or three days; that delirium was not a common feature of the illness unless the temperature was high. Typhoid being a low fever this was not usual. The patient although not quite normal was perfectly in possession of his senses and knew quite well what he was doing. He could see and was conscious of his surroundings. He had no persistent agony or pain nor had he been delirious or comatose within the doctor's knowledge. Other evidence showed that the will had been drafted on the instructions of the testator. It has been settled law since the case of *Parker v. Felgate* 1883 8 P.D. 171 that if a person has given instructions to a solicitor to make a will and the solicitor prepares it in accordance with those instructions the testator need only be able to reflect: 'I have settled that business with my solicitor. I rely upon him as having embodied it in proper words and I accept that paper which is put before me as embodying it.' As the case was settled the court had no opportunity of hearing evidence by Sir William Wilcock and Dr. G. W. B. James on the probable effect of a perforated typhoid ulcer on the mind of a testator. The case is interesting not only because the cause of the alleged testamentary incapacity was unusual but also because although the events happened nearly thirty years ago the evidence of the medical attendant was available. Its absence would probably have handicapped the executors considerably for the onus was upon them to prove that the will had been properly executed.

REFORM OF THE CURRICULUM

(FROM OUR EDINBURGH CORRESPONDENT)

A DISCUSSION on medical education was held last week in Edinburgh under the aegis of the University Union.

Sir FRANCIS FREEMANTLE, speaking as a medical Member of Parliament, said that in establishing the General Medical Council Parliament had delegated to the profession itself the duty of maintaining standards of education and etiquette. The standards thus attained were high but the dual factors of government protection and stereotyped training had resulted in a rigidity of mind in the profession and an undue bias against innovations as was exemplified in its tardiness to acknowledge the principles of homoeopathy and osteopathy. Among changes he would recommend in the medical curriculum was more thorough instruction in the history of medicine to offer encouragement and to foster the student's pride in his profession. Teaching should be directed rather to the maintenance of perfect health than to the cure of disease and a place should be found for instruction in administration and communal medicine. He accused physicians of faulty pathology; the identification of an organism should not end the investigation of a case; the patient should be followed to his home or place of work and the prime cause which had enabled that organism to flourish should be sought and eradicated. Students should be judged in examinations not only by the marks then obtained but also by their previous record of work, intelligence and tact.

Dealing with the supervision of medical schools

by the General Medical Council, Sir Francis maintained that the Council's powers were too restricted, further that the Council, as now constituted, with members who had received their training upwards of thirty years ago, was not a suitable body to make the necessary improvements. There was but little prospect of aid from the Government in reforming the medical curriculum, and such reform must be initiated by the individual medical schools, and especially by the universities. He favoured the appointment of younger men to the General Medical Council, the addition of student representatives to boards of studies, lay representation of the health services on the General Medical Council, and the formation of a statutory Health Council under the Privy Council, which would assist the General Medical Council in the necessary reforms, and be responsible to Parliament for the co-ordination of health services.

Dr G. O. BARBER (Cambridge and St Mary's Hospital, London) spoke as a general practitioner. The student, he said, tended to regard the acquisition of a medical degree as fully and finally qualifying him to undertake the care of patients. This view was encouraged by the general public, which placed unfaltering faith in those who hold such a degree. In point of fact the possession of this degree indicated only that a high standard had been reached in a large number of disconnected, academic, scientific subjects. Dr Barber pleaded for a larger representation of general practitioners on the General Medical Council, and amongst the teachers and examiners of students. Speaking of the teaching of future general practitioners by specialists under the present system, he declared "we are like bricklayers, who have been taught to mix their mortar by architects who have never touched a brick." He wished to see more thorough grounding in the common ailments, strict limitation of academic instruction, and a break down of the watertight compartments in which subjects were now taught. The medical course should involve less memorising, there should be more direction of the student's thinking powers, and less exhibition of the teacher's prowess. Academic instruction should be reduced to that minimum, which included only material directly applicable to practice, and such instruction should be undertaken in connexion with practical work. Anatomy and physiology should be more closely correlated, as should also pathology and bacteriology, and the connexion of these subjects with clinical medicine should be more adequately demonstrated. The anatomy course should be much curtailed. Dr Barber pressed the claim for instruction in the common ailments and social and preventive medicine, whilst agreeing that this would necessitate the surrender of some part of the present curriculum. He thought that the special subjects, of which only a general knowledge was needed, might be pruned.

Prof SYDNEY SMITH defended the curriculum at Edinburgh as being years in advance of that at any English school. The claims of preventive medicine were amply realised, at least in Edinburgh, and this was exemplified by the chair in child life and health, by the institution of school medical services, and by systematic antenatal supervision. Prof Smith contended that the premedical subjects—physics, biology, and chemistry—should be learnt at school. It was intended at Edinburgh University to institute a full five years' course, not including these subjects, which could then be learnt either at school or at the University in a course unconnected with medicine. Other changes shortly to be effected at Edinburgh were the curtailment of practical anatomy and

lengthening of the course in physiology, a more generalised instruction in biology, and a fuller course in applied physiology and anatomy, to be continued throughout the five years. The systematic teaching of medicine and surgery was to be largely transferred from the third to a later year, and instruction in these subjects was to be given in hospital, to ensure that the theoretical and clinical aspects should be not divorced. Further clinical instruction was to be given at the expense of vacations. Under the system now employed in Edinburgh, pathology and bacteriology were closely correlated with theoretical instruction in medicine and surgery, and with clinical work. Prof Smith strongly rebutted the suggestion that the teaching of special subjects should be curtailed. This instruction was, he asserted, essential and was general enough to be of interest to the general practitioner. He approved of the teaching of students by specialists, who, he asserted, were not unmindful of the needs of the general practitioner. The practitioner required the first class training, which the specialist could offer. While allowing that much could be said in support of the old system of apprenticing students to practitioners, he thought the present system fitted the student more fully for his manifold rôles, as scientist, artist, and priest. It was true that a student could not be a competent physician after five years' training, but the degree he obtained implied a solid basis on which he could build for the rest of his life.

After further discussion Dr CHALMERS WATSON, in summing up, supported Sir Francis Fremantle's plea for a reorganisation of the curriculum, and emphasised the necessity of instruction in preventive medicine.

THE ROYAL SOCIETY

THE only medical man among the 15 Fellows elected to the Royal Society on May 6th was Dr A. N. DRURY, lecturer in pathology in the University of Cambridge. He is distinguished for researches on the refractory period of, and conduction in, heart muscle, for studies of coronary circulation, and of the physiological action of adenosine. He has recently published jointly observations relating to the action of psychosin sulphate on bacteria, toxins, serum, and red blood cells. Mr Percival Hartley, D.Sc., does valuable work in close relation to medicine as director of biological standards at the National Institute for Medical Research, and as member of the British Pharmacopœia Commission.

We offer cordial congratulations also to Mr I. D. BERNAL, lecturer in crystallography, University of Cambridge, Mr A. C. CHIBNALL, assistant professor of biochemistry, Imperial College of Science and Technology, Mr G. R. CLEMO, professor of chemistry, Armstrong College, University of Durham, Mr H. V. FOX, professor of zoology, University of Birmingham, Mr W. E. GARNER, professor of physical chemistry, University of Bristol, Mr Sydney Goldstein, Ph.D., lecturer in mathematics, University of Cambridge, Mr H. L. HAWKINS, professor of geology, University of Reading, the Rev J. E. HOLLOWAY, lecturer in botany, University of Otago, Mr William Hume ROTHERY, D.Sc., Warren Research Fellow of the Royal Society, Mr T. G. MASON, Sc.D., of the Cotton Research Station, Trinidad, Mr J. R. MOIR, archaeologist, Mr M. L. E. OHPHANT, Ph.D., assistant director of research, Cavendish Laboratory, Cambridge, Mr C. F. A. PANTIN, Sc.D., lecturer in zoology, University of Cambridge, Mr D. R. PRESTON, Sc.D., deputy director of scientific research Air Ministry, and Mr E. C. STONER, Ph.D., reader in physics, University of Leeds.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half yearly index.

FROM A MEDICAL ECONOMIST

III

WHEN children are all their toys the toys they cannot play with acquire a new significance. If the illness is very serious parents will scarcely endure the sight of these toys.

If the subject is discussed at all it is usually spoken of in terms of memory the idea being that the toys recall happier days. A dramatist however who is accustomed to secure his effects by means of material things as well as by means of words and gestures and expressions challenged this view recently in my hearing. It is not he said that the toys recall happier days in the past but that they demand happier days in the future.

Asked to explain himself he mentioned the wedding dress of which so much use is made by Sir James Barrie in his play *Quality Street*. A glimpse of that dress towards the end of the play makes many people weep he declared. Indeed the dress undergoes transmutation from act to act. At first it is just a wedding dress, at last it has become an actor endowed with a personality of its own and playing the chief part. The effect is tension—the hope that the wedding dress may yet be worn. Kill that hope and the dress loses its significance and becomes a relic.

I suppose that it can be said that in the same way the toys are unbearable because of the hope of recovery. If recovery does not take place the toys will become relics to which no tension will attach. Indeed, in that sorrowful case, they may as precious memories afford some consolation.

* * *

The point that seems to emerge is the tendency of all men and women to transform the materials which surround them into spiritual values. My hat in the latter shop and my hat upon my head are two widely different things. In the latter case side by side with consumption there is going on a process of change whereby what was an obvious and definite as a brick is becoming endowed with new mysterious qualities. Aristotle understood this process and detected in all things two kinds of substance—the accidental and the essential. The accidental substance of my hat happens to be black felt—it might have been straw or beaver or cloth; its essential substance is its hatfulness.

Aristotle devoted long and careful thought to the nature of essential substance and it is profitable still to ask oneself: What is a hat? What is a chair? and so on. The question soon convinces those who ask it that no definition in terms of material substances that is of accidental substances is possible. Nor will mere description afford a satisfactory answer. Whether we like it or not we shall find ourselves compelled to bring in the human element. Thus a hat is a covering for a head; a chair is something upon which to sit. Our definition is therefore teleological. Further it expresses a relationship between the designer and maker of the hat and the user—a relationship which if the hat is a good one is likely to be of a neighbourly character in the broadest sense of that term.

The hat in short, embodies an idea of a specific kind—namely usefulness. It is upon this idea that its owner's mind becomes fixed and it is this idea which if the owner lies ill, will occasion tension in the hearts of those who care for him. No piece of material unmade into an article of use is capable of producing such tension.

* * *

Aristotle called his study metaphysics. Another name was given to the same study by St. Thomas Aquinas who recognised in the products of craftsmanship an expression of the emotional relationship which exists between all men of good will. Essential substance for him was love and he saw the material universe therefore as a spiritual universe. *Verbum caro factum est*. Thus he recognised the capacity of material things to become vessels or containers of spiritual things nor was he disposed to establish any sharp differentiation between the vessel and its contents. The wood of which the chair was made was in fact, the chair. It had been subjected to a process of transubstantiation whereby retaining the physical properties of wood it had nevertheless acquired the metaphysical or as he would have preferred to say neighbourly qualities of a chair. It had acquired also the power to create tension in the form of a claim to be used.

St. Thomas supposed that this claim to be used was characteristic also of living forms and his ideas have an important bearing to day upon the attitude of men who cannot find employment. These men as we are all well aware produce a tension in the minds of their neighbours which recently was one of the most important elements in the political and economic life of the country.

Incidentally the identity of a man with his use to his fellows the transmutation of man into craftsman, artist, doctor is from the individual's point of view a very remarkable psychological process involving not only a discipline or if the word be preferred a morality but also an enthusiasm strong enough to carry the apprentice or student through the severe restraints of training. Such enthusiasm may not be self-conscious in the sense that a definite service is held in view from the beginning but since it seeks and finds some particular expression—making chairs or painting pictures or engaging in medical research—it is not the less on that account a surrender of purely selfish aims and so a kind of rebirth. Not only has the craftsman acquired power to transmute materials into spiritual values; he has himself also in the process been transmutated so that the greater his capacity to create the greater also is likely to be his contempt of personal considerations or personal selfishness. His body an accidental substance has thus become identified with the essential substance of love.

* * *

The fact of this transubstantiation is always present consciously or unconsciously to the doctor's mind in which invariably it produces tension. The doctor feels that the body disabled by sickness challenges him to restore it to its usefulness and so to secure the future. In responding to that

challenge the virtue goes out of him and he experiences, often, a sense of exhaustion disproportionate, apparently, to the effort he has made. In fact, his effort is creative in the true sense of that word, for the injury he essays to repair is not to flesh and blood only but also to the power which has transmuted flesh and blood into spirit.

That power, in the case of materials, lies outside of the material itself and must be imported into it. This is so obvious that none for a moment doubt it. But where flesh and blood are concerned such importation, being less obvious, is often overlooked. The body is self-repairing and so we discount the truth that external influences can be, and always are being, exerted upon the reparative process. One of these influences, as has been said, is that virtue which the doctor feels he has lost, another is the patient's own enthusiasm, that is to say the patient's own spirit. He who turns his back to the wall will not recover. It is difficult, in the face of that fact, to avoid the conclusion that the rebirth which is the finding of a vocation is the importing into a man's body of a new director, spirit, or soul, henceforward to be the man. Browning had knowledge of that incarnation when he wrote

'Lo a blade for a Knight's emprise
To fill the empty sheath of a man

And during many centuries the thought of Europe was focused upon it. Thus, it was believed that help given to anyone in distress was help given to the spirit in possession of the distressed person's body. The story of St. Christopher is a case in point, so

is the story of the crippled child who, on being rescued, was transmuted miraculously into the form of Christ. Doctors, on that showing, healed souls or rather helped souls to heal themselves. The conception of a secular medicine was almost wholly unknown.

* * *

It is of interest to note that, until frustration fell upon the world in the nineteenth century, poets and artists accepted the idea of immortality as self-evident. The poets of the frustration period are, without exception, minor poets. To be condemned to uselessness in unemployment or to perverted use in sweat shops is, apparently, to lose that sense of the supernatural which is the heritage of all men whose enthusiasm to serve their fellows has free play. In a world of frustration and perversion, moreover, the minds even of the free become darkened. Thus there would seem to be an interaction between economic conditions and the intimate texture of thought. The chairs in a museum, so long as they remain out of reach, are wood and upholstery, the men held prisoners of enforced idleness or perpetually vexed by fear, are so much flesh and blood—in Mr. Roosevelt's terrible phrase "industrial cannon fodder." Not for them the ecstasy of self-surrender to love of their fellows, the stern and inexorable morality inculcated by refractory materials, the growing sense of identity with powers which are not of this world, and so of emergence from the dimensions of space and time which flesh and blood, untransmuted, impose like a turnkey upon the human spirit.

PARLIAMENTARY INTELLIGENCE

THE FACTORIES BILL IN COMMITTEE

THE Factories Bill was further considered by a Standing Committee of the House of Commons on April 27th. Major LLOYD GEORGE was in the chair.

On Clause 68 (General conditions as to hours of employment of women and young persons),

Mr. SILKIN moved an amendment to provide that as respected young persons where the hours of employment included the hours from half-past eleven in the morning to half-past two in the afternoon an interval of not less than three-quarters of an hour should be allowed between those hours for dinner if dinner was taken in the factory or in a building of which the factory formed part, or one hour if dinner was not taken in the factory or such building. He said that hon. Members had recently been concerned with malnutrition, it was almost as important to secure that meals should be taken at the proper times as that they should be of the right quality and adequate in quantity. As the clause stood young persons might be employed for considerably longer than three hours without any guarantee of a proper meal time between half-past eleven and half-past two. The principle of the amendment was accepted as far back as 1912 and was contained in the Shops Act of that year.

Mr. G. LLOYD, Under-Secretary, Home Office, said that in 1912 there was no limit to the hours for women and the limit of weekly hours for young persons was 74. It was therefore imperative to see that there was sufficient time for lunch in the middle of the day. The position was very different under this Bill. It was a question of striking a compromise in individual cases all over the country.

Mr. BANFIELD said that he knew that even to day in thousands of workshops young persons got no proper meal time. Mr. LEWIS JONES said that every employer was anxious that proper facilities should be given for meals, but this amendment might interfere with the collective agreements which

had been made by trade unions and employers, in some cases providing for a minimum of one hour for the midday meal. Mr. SHORT said that if when drawing up welfare orders the Home Secretary would undertake to consider this aspect, particularly in respect of young persons, and make some conditions regarding the hours of meals that would meet the Opposition.

Sir JOHN SIMON, Home Secretary, said that he did not think that their existing powers as regarded welfare orders covered an actual mandatory direction as to the length of the interval for meals. The conditions in different kinds of work varied very considerably and it was better not to make a stiff rule which had to be applied indiscriminately. The effect of a discussion like this however, which would be noticed outside, was all to the good, because no one desired to rush people unduly, or to give them indigestion.

The amendment was negatived.

On the question that the clause as amended stand part of the Bill,

Mr. RHYD DAVIES said that the Labour Party would vote against the clause to show their dissatisfaction with it. He was a little alarmed that members of all parties failed to understand that this country was lagging behind some other industrial countries in the treatment of young people. He was ashamed at the way boys and girls were exploited in hotels. Mr. GRAHAM WHITE said he hoped the limit of working hours for young people would be nearer 40 per week than 46. Sir W. SMILES said it was unnecessary for young people under 15 to work in factories or to work 48 hours a week, but some workers in his constituency seemed to want their children to go to work at 14 and to work for 48 hours a week. Mr. VIANI said that many of the parents referred to by Sir W. Smiles had small incomes and that was why they were anxious for their children to go to work at an early age. When they realised that it would be for the ultimate benefit of their children that they should not start work so early

their attitude would change—Mr G MANDER urged that the Committee should consider the limitation of working hours for young people up to 18 years—Mr G BUCHANAN said that the clause was shockingly inadequate.

Sir J SIMON said that he had undertaken to put down a new clause modifying the hours of labour in factories for young persons between 14 and 18. He was glad that the Committee was going to make the modification in the hours of work of young people. He was sure it was right.

The clause as amended was ordered to stand part of the Bill by 34 votes to 18.

On Clause 70 which provides that with limitations pressure of work in any factory may be dealt with by the employment on overtime of women and young persons who have attained the age of 16.

Mr LILLIA SMITH moved an amendment to delete the reference to young persons who have attained the age of 16—Mr M McCORQUODALE supported the amendment. He said there was a general feeling in the country that young people ought not to work overtime—Mr VINT said that they should prohibit the working of overtime by young people under 18—Sir J TRAIL said that overtime was not economic, but it had to be worked in certain circumstances—Viscountess ASTON said that an overwhelming case had been made out for the amendment. Every organisation concerned with juveniles was alarmed at the effect that overtime had on them. The question had been asked whether industry could afford not to employ young people overtime, but the real question was whether the country could afford to overwork its juveniles—Sir W SMILES said that if overtime for persons up to 16 was prohibited there should at least be some exceptions such as apprentices in the engineering trade—Mr WAKEFIELD said that young persons between the ages of 16 and 18 should not be allowed to work for more than 48 hours a week.

After further debate

Sir J SIMON said a Factory Bill worthy of the name must within limits make improvements which would involve a certain measure of reorganisation. At the same time they must realise the difficulties. There would be very many cases which would never come up to the maximum and which he hoped increasingly public opinion would urge should be brought below the maximum. They wanted to know to what extent the provisions of the Bill would be an advance on present conditions. He had a list of some 31 trades. In the woollen and worsted trade in 45 per cent of the factories over 100 hours of overtime per year were being worked by women and young persons. In 20 per cent of the cases over 150 hours a year were worked. In 18 per cent over 200 hours and in 9 per cent over 300 hours. These were very big figures. They were of course a great deal short of what the present law allowed—Mr GIMMERS: Were those hours worked in addition to the 48 hour week?—Sir J SIMON answered in the affirmative. He gave figures showing the amount of overtime worked in various trades at present though he did not suggest that the present position ought either to be authorised by Parliament or made a standard for the future. But under the existing law over and above the 48 hours a week it was possible in a non-textile factory to have in the year 410 hours of overtime for women and young persons and in textile factories the figures were somewhere between 400 and 600 hours. At the present time those hours might not be worked in many factories but the figures in a large proportion of cases greatly exceeded that which this Bill would make permissible. The Bill would involve much reorganisation in many factories. In September 1936 the Ministry of Labour appointed a Board of Inquiry which after investigation recommended that from Jan. 1st 1937 the number of hours for all workers employed in the industry should be 48 per week. They recommended that paid overtime might be permitted in excess of 48 hours and they also recommended that in the case of women and

young persons under 18 overtime should be restricted to six hours per week and that the total overtime worked by any individual woman or young person in any calendar year should not exceed 96 hours. Those recommendations were subsequently embodied in a collective agreement between the parties in the industry and that agreement was now in force. He would remind the Committee that the Government had approved the view that there should not be any overtime at all for juveniles between 14 and 16. He would give figures to illustrate that change. The present legal hours for young persons between the ages of 16 and 18 in a year were 7600 hours, cutting out one week for a statutory holiday. Under this Bill they were going to reduce that total to 2550 hours—10 hours a week less in a 51 week year. That seemed to him substantial. In addition they were laying down that overtime should be limited to 100 hours and that there was not to be more than 30 weeks in which it could occur and if it occurred to the maximum extent permitted in one week it would not be spread over more than 10 weeks. What more could the Government properly and wisely do? He did not attach much importance to the argument that they might have a breakdown or that two or three boys might be away through illness. It was the industries which depended on juvenile labour which mattered and there were something like 500,000 people between 16 and 18 engaged in factory work of some kind or another.

It seemed to him that there were two qualifications which should be made on the proposals of the Bill. (1) That even this limited amount of overtime ought not to be allowed in an industry which was injurious to the health of young people. (2) That if as a result of inquiry the view was taken that overtime could be reduced without serious detriment to the industry the Secretary of State might make regulations to that effect.

Mr SIMON said that Sir J Simon had given them nothing and had entirely ignored the collective opinion of the Committee.

The amendment was negatived by 31 votes to 19.

A further amendment to add a provision that no young person in a factory should work more than 50 hours overtime in any calendar year was also negatived by 33 votes to 21.

The Committee adjourned.

The discussion of Clause 70 was resumed by the Committee on April 29th.

Mr G MANDER moved an amendment to limit the overtime to 20 weeks in any calendar year.

Sir J SIMON said he would be prepared to agree to the figure of 30 being reduced to 20 if that was thought to be an advantage. They wanted something in the Bill to show that overtime was not intended to be the rule.

The amendment was agreed to with the figure fixed at 25.

Sir J SIMON moved a new subsection to provide that if representations were made to the Secretary of State concerning any class of factories that having regard to the particular circumstances the overtime allowed under the clause could be reduced without serious detriment to the industry he might direct an inquiry to be held and make regulation for modifications to secure a reduction of overtime worked by women and young persons in such factories.

The new subsection was agreed to.

Sir J SIMON moved a further new subsection providing that if he was satisfied that the business in any class of factory involved the overtime employment of different persons on different occasions to such an extent that the provision limiting overtime would as respects a substantial number of factories of that class be unreasonable or inappropriate he might make modifying regulation. Such regulations would secure that no woman should be employed overtime in a factory for more than 50 hours and no young person for more than 40 hours in any calendar year and that no woman or young person

should, except as otherwise provided in the regulations, be employed overtime in the factory for more than six hours in any week or more than 25 weeks in any calendar year.

The new subsection was agreed to and Clause 70 as amended was ordered to stand part of the Bill.

The Committee adjourned.

The Factories Bill was further considered by a Standing Committee of the House of Commons on May 4th with Major LLOYD GEORGE in the chair.

On Clause 78 (Exceptions as to male young persons employed in shifts),

Sir JOHN SIMON moved a series of amendments which he said were designed to meet the wishes of certain members of the committee. This clause was directed to industries which required to be carried on continuously day and night. The present law did allow exceptional provisions to be made for night work in processes which required continuous attention, even in the case of young people under 18. He had come to the conclusion, especially in view of what the committee had done earlier in the Bill, that it would not be right to make any exception at all as regarded young persons under 18. They might have to do it in the case of youths between 16 and 18, but it was not necessary to do it for anybody younger and he proposed to make that clear in an amendment. Provision would also be made for an interval of not less than fourteen hours between shifts. Young persons over 16 would be periodically examined by the examining surgeon in the conditions of the work in order to see if they were fit for employment at night.

Several amendments carrying out the proposals indicated by the Home Secretary were agreed to.

Mr A. SHORT moved an amendment to delete the part of the clause which allows young persons to work on the four-shift system between 6 A.M. and 10 P.M. on Sundays.—Sir J. SIMON said this was a system employed in certain trades and undoubtedly it appealed very much to the workers employed under it. He thought that they ought to give fair latitude to a system which had considerable practical advantages. The amendment was negatived.

On the question that the clause stand part of the Bill,

Mr DENMAN said that night work for young persons was so well-accepted in industry that there was no chance of abolishing it at this stage, but he thought that it was desirable that it should not go out that that committee really approved of night work for young people as a permanent system. Medical evidence was lacking to show that it was injurious to the young persons themselves, but the point was that it was injurious to them as adults. He had had statements to that effect not only from a doctor of a London hospital who had experience of the effects of night work, but a factory inspector told him (Mr Denman) that although they could bring no kind of evidence of ill health among young persons they could see the result in adults by whom they were surrounded every working day. An authoritative statement of the case appeared in THE LANCET (Feb 20th, 1937, p 451) after the second reading of this Bill. It was a very interesting editorial article which he wished hon. Members had read. It pointed out the simple fact that the evil appeared later in life and it made this a very interesting point in arguing that it was biologically unsound to subject young persons between 16 and 18 to the strain of night work. He felt sure that as we rose in civilisation, and as we paid more attention to the importance of youth in building the nation, we should raise this age from 16.—Mr VIANT said it might not be possible to produce medical evidence, but from his own experience he knew that night work was not good for the health of anyone. He deplored the fact that the committee had not seen the wisdom of inserting in this clause a proviso prohibiting night work for young persons up to the age of 18 at least. This was the one black spot on the clause.—Sir E. GRAHAM-LITTLE said that

no doubt he was asking for a counsel of perfection, but that did not deter him from making his protest against working young persons on night work. He would give some recent figures from an authoritative book just published by Dr Vernon, an experienced research worker, whose conclusions had been accepted by the whole medical profession. Dr Vernon showed that there was an extraordinarily high mortality-rate in the age-group of males between 15 and 19. He dealt with large figures because the unit was 40,000. In this age-group the number of fatal accidents was very high, they constituted one-fifth of the deaths in that group. The Departmental Committee on the Employment of Young Persons in their report recommended a general prohibition of night employment for a period of eleven hours, including the hours of 10 P.M. to 6 A.M., for young persons. The incidence of accidents during night work was also discussed in Dr Vernon's book in a most judicial way. He said that on the whole accidents were more frequent during night work than during day work. In the iron and steel industry the rate was sometimes 50 per cent higher. If they had a combination of what they might call an accident-prone group, boys between 15 and 19 years of age, and an increased rate of accidents in steel works, were the committee really comfortable in going forward with the suggestion that these boys should work at night in steel works? He thought there was a strong case for reconsidering this matter.—Viscountess ASTOR said that Sir E. Graham Little had made out a very good case against night work for young people. If the Home Secretary would raise the age to 17 he would go a little way to meet the case. She could not possibly vote for working children of 16 on night work. The clause was ordered to stand part of the Bill by 24 votes to 13.

On Clause 89, which provides that the period of employment of male young persons who have attained the age of 16 may begin at 5 o'clock in the morning in that part of a bakehouse in which bread making is carried on,

Mr J. W. BANFIELD moved the deletion of the clause. He said that there was no need for it in the trade.

Mr G. LLOYD, Under-Secretary, Home Office said that the 5 A.M. start for boys in bakehouses had almost disappeared in England, but it was not uncommon in Scotland, where apprenticeship started at 16 years. The Committee should pass the clause on the understanding that it might be modified when the report on the Committee on Night Baking was available.

The clause was ordered to stand part of the Bill.

On Clause 92 (Certificate of fitness for employment of young persons),

Sir E. GRAHAM-LITTLE moved the first of a series of amendments designed to enlarge the scope of the clause by enlarging the class of young persons who would be the subject of medical examination before being engaged in factory work. He said that the amendments were all attested by medical authorities.—Mr GRAHAM WHITE hoped the Home Secretary would see his way to meet the point put forward in these amendments. There seemed to be no reason at all, and in fact every reason to the contrary, why the present provision in the Bill which limited the examination to young people under 16 should not be extended. He was advised that it was particularly valuable and necessary in the case of female young persons between 16 and 18. In any case, a single examination within a few days of the entry into employment was a very inadequate safeguard. Those who put forward these amendments urged that the scope of the clause should be enlarged by making the examination apply to all those up to the age of 18, and also that the examination should be repeated as a safeguard from time to time.

Sir J. SIMON said he did not deny that there were fair arguments for raising the age and the Factory Department and medical officers of the Home Office were not in the least disposed to pour cold water

on that idea if on balance it was a good one. The clause required that every young person entering a factory under the age of 10 should be examined by the examining surgeon. If there was any doubt as to fitness for employment the examining surgeon would re-examine. The advice given to him by the responsible medical authorities who were connected with the factory system was that these examinations were sufficient to secure that any young person under 10 who was suffering from defects would be warned off that employment and have to find his living elsewhere. It was intended also to make the examination a much more satisfactory one than previously. There was also to be a liaison between the examining surgeon and the school medical officer. There was a second point on which his medical advisers felt very strongly indeed. They were satisfied that there might be a considerable amount of feeling on the part of the older juveniles if it was said that because they chose to come into factory life they would by law be put under compulsory medical examination at intervals. They were making improvements in the medical inspection and it would be a mistake to go further.

After further debate the amendments were with drawn and the clause was ordered to stand part of the Bill.

The Committee adjourned.

PANEL DOCTORS FEES

In the House of Commons on Thursday May 6th, Mr RICH DAVIES asked the Minister of Health whether he was now able to state the terms of reference and the personnel of the tribunal to inquire into the fees paid to panel doctors under the national health insurance scheme.

Sir KINGSLEY WOOD replied that the object of the Court of Inquiry appointed by the Secretary of State for Scotland and himself was to investigate the question whether any and if so what alteration ought to be made in the amount of the doctor's capitation fee having regard to any changes since 1924 in the cost of living, the working expenses of practice, the number and nature of the services rendered to insured patients, and other relevant factors. He was glad to say that the services of the following gentlemen as members of the court had been secured: the Right Hon Lord Amulree O.B.E., K.C., LL.D. (chairman); Mr Thomas Howorth A.O.A. and Mr D. H. Robertson M.A., Mr F. H. Phillips O.B.E. of the Ministry of Health to be Secretary.

The following are the terms of reference of the Court of Inquiry:—

To inquire and report to H.M. Government whether any and if so what alteration ought to be made as from Jan. 1st 1938 in the amount of the capitation fee (per insured person per annum) on the basis of which the Central Practitioners Fund under Article 10 of the National Health Insurance (Medical Benefit) Regulations 1936 and the corresponding Scottish Fund under Article 10 of the National Health Insurance (Medical Benefit) Consolidated Regulations (Scotland) 1929 is calculated having regard to any changes which may have taken place since 1924 in the cost of living, the working expenses of practice, the number and nature of the services rendered by insurance practitioners to their insured patients and other relevant factors. The inquiry is to proceed on the assumption that as from Jan. 1st 1938 employed persons under the age of 16 will have become entitled to medical benefit by virtue of amending legislation but that the conditions would not impose any obligation upon the practitioner to issue medical certificates to these persons. The capitation fee is not to include any payment in respect of the supply of drugs and appliances or any payment to meet the special conditions of practice in rural and semi-rural areas. Payments to insurance practitioners in respect of these matters are the subject of separate arrangements and are outside the scope of the inquiry.

Mr RICH DAVIES asked whether the right hon. gentleman contemplated that the report would be

issued soon enough to admit of the Bill which he had promised, being presented to Parliament and passed into law before the summer recess?—Sir KINGSLEY WOOD hoped that would be so.—Mr THORNTON asked whether the inquiry was not made necessary by the fact that the right hon. gentleman could not reach an understanding with the doctors.—Sir KINGSLEY WOOD thought it should rather be regarded as a friendly arrangement to have this matter dealt with by independent people. There were discussions between the British Medical Association and himself on this matter and this appeared to be the best means of dealing with it.

DIETARY SURVEYS AND NUTRITION POLICY

In the House of Lords on May 5th Viscount ASTOR drew attention to the report of the Advisory Committee on Nutrition to the Ministry of Health and in view of the recommendations of that committee asked (a) whether the Ministry of Labour in pursuance of the purpose of the cost of living index would include an inquiry into dietary surveys and if so how many families would be concerned in this inquiry, and what steps were being taken to ascertain the family incomes so as to correlate this inquiry with that proposed to be undertaken by the Registrar-General and an independent statistician; (b) whether steps had been taken by the Registrar-General to carry out this proposed inquiry into the constitution of families by age, sex, occupation and locality and into the distribution of family incomes; (c) what local authority in urban and rural areas respectively were conducting dietary surveys in England and Wales and in Scotland respectively, and about how many families would be covered in each country. The noble Lord moved for papers.

Lord ASTOR said the main cause of the evils of malnutrition was undoubtedly poverty. By malnutrition he did not mean hunger or starvation but a degree of ill health or of subnormality due to malnourishment and in other cases actual bad physical development due to malnutrition in early youth. So that the problem really was one of purchasing power. Where they had a small income they had a small expenditure on the essential foods—the health giving foods. It was a serious problem because a large number of people who showed the effects of malnutrition could not be put right. It was a problem which arose very largely because of malnourishment in youth. A certain number of cases of maternal mortality were due to malformed pelvis. That was largely due to the malnutrition of the woman when she was a child. The difficulty was that they had to get into their minds an entirely new standard. He had no doubt that at the beginning of last century medical officers were perfectly satisfied with the housing conditions in our large industrial centres. To-day those same medical officers were unanimously agreed that those houses must be pulled down as slums. They had to bear that in mind when they saw quoted as they so often did reports from medical officers of health to the effect that there was no problem of malnutrition. Those who made such reports were out-of-date; they were not acquainted with the new knowledge—the new findings of science. After making all the allowances for exaggeration and over-statement one could say without fear of contradiction that there was a real problem of malnutrition affecting millions of people of this country. In the Advisory Committee's report reference was made to methods of clinical assessment. Did the Ministry contemplate undertaking an investigation of the clinical aspects in direct correlation with the dietary surveys which it was proposed to make? The main function of agriculture, certainly in this country, should be to see that the right sort of food were provided at the right costs for our people. We should aim at having our agricultural policy upon the methods of the farmers who are making money rather than pay so much attention to the shouts and protests of the farmers who were not making money or who were losing money or who

did not want to change their methods in order to move with the times. The Advisory Committee's report had indicated the importance of the nutrition of milk as an article of consumption and diet. It was the foundation of good nutrition. This country was surely a suitable and good country for milk production and yet after four years of the Milk Marketing Scheme they found a very low consumption of milk, retail prices the second highest in the world, and the dairy farmers were all discontented. There surely must be something fundamentally wrong with a scheme that had such results. The first thing wrong with the Milk Scheme was the structure of the governing body. If they were dealing with armaments nobody would suggest that they should go to the armament firms and say "We will pass an Act of Parliament giving you statutory power to form a monopoly ring. You can elect your own governing body, and if any armament manufacturer dares to cut prices you can put him in prison, and we will have no Ministry of Munitions to supervise." That was being done under the Milk Scheme. The second thing which was wrong was that the Milk Board had used its powers in order to develop new industries in this country. These activities of the Milk Board had been condemned by the Milk Commission which had recently been sitting and also by the Milk Council, but the result of all this was that the price of milk in England to day was much too high.

The Minister of Health, as soon as the Report of the Advisory Committee was published, circulated all local authorities drawing their attention to the recommendations of the report of the Committee and urging them to make more provision for supplying milk to mothers and children. Why should the Minister of Health ask the ratepayers to spend money in buying milk which had been artificially put up in price by another colleague in the Cabinet? The Minister of Health must get his colleagues in the Cabinet to give the country reasonably cheap milk—milk produced by an efficient dairy industry—and then he could justifiably ask the local authorities to accede to his request. Their aim should be to reduce the price of milk by 8d a gallon, which would bring it down to 2d a pint, instead of 3d, which was the present cost. Even after they had done that, they would still have to have subsidised milk for large sections of the community. They could reduce the cost of milk by one-third. First of all they could save 3d a gallon by stopping the subsidy and they ought to be able to save 3d or 4d on distribution. Ulster had a milk scheme which had been eminently satisfactory because the controlling influence on the Ulster Milk Board lay with the members nominated by the Government though the producers were represented too. Also the milk was compulsorily graded according to its hygienic quality, and farmers were paid according to the grade they produced. It worked automatically and, as a result, in Ulster the price of milk was very much lower than it was here. As to distribution he would advocate a bold policy. He found no reason why the nation should not have control over the wholesale distribution of milk. In Scandinavian countries they had what was called the Oslo breakfast—every child who arrived half an hour before school opened got a free breakfast of a glass of milk and bread and butter or margarine with fruit and also a cereal if possible. He (Lord Astor) did not necessarily advocate free meals to all children, or say all children should have to pay for them. He thought they must contemplate subsidising food, not only for children of school age but also for the pre-school child in nursery schools. He was glad to notice that in his circular to local authorities the Minister of Health urged local authorities to help mothers at maternity centres. If they were to subsidise the consumption of these protective foods so that mothers, pre-school children, and school-children had enough of them, in the next generation the country would have a very much stronger and healthier race and a much more prosperous agriculture.

LORD SNELL said that there was something incongruous in the fact that at a time when they were undertaking great national rejoicings they should have to confess that a large proportion of our population was actually underfed. The Government and people about the country seemed to be pursuing a false way of approaching the problem, in that they were putting the question of gymnastic exercises and of keeping fit before the question of feeding. It was good to see the grace of young life in gymnasium and elsewhere, but inflated muscles did not compensate for weakened hearts, and jerry-built manhood of that character was not what the nation required. The proposals made by Lord Astor should be very seriously considered by the Government. The right way to begin was first of all to feed the children and the mothers. There was no need to haggle as to whether milk should be 3d or 6d per pint, or what the profits should be. It was the business of the community to feed its children. What the children required was milk and if it could not be paid for, the Government should provide that milk free for children and also for expectant and nursing mothers—LORD ELSTISLEY said that the Milk Marketing Board and the various committees connected therewith had prevented a certain collapse of the milk industry in this country. It had undoubtedly saved from disaster 135,000 milk producers—LORD NOEL BUXTON said that the experience of such bodies as the Save the Children Fund confirmed the plea that Lord Astor had made. He was glad that the Government in dealing with the problem had not been governed solely by the theory of parental responsibility, but had ensured a better start in life for countless children who otherwise would have suffered. All the evidence showed that that policy ought to be carried further—Viscount BLEDISLOE said that as regarded young children we in this country might learn a great deal more than we had yet learned about their care, and particularly the supply and treatment of milk, from New Zealand, where the Plunket or Truby King system had been in use for a great many years and where the vital statistics showed the enormous advantage to the infantile population as the result of this system carried through not only for the benefit of nursing mothers but for the benefit of both mothers and children in what were known as the Karitane Homes which were to be found all over the Dominion.

The Bishop of NORWICH said that he thought they were apt to confuse the nutritive value of milk with the other side of the milk question. He could not feel certain that the restrictions now put upon the quality of milk were really as necessary as medical men told them they were, and the dairy farmers were in consequence striving to reach a standard that after all the medical man might one day pronounce to be unnecessary. He had never yet seen anything really convincing to show the relative nutritive value of plain milk, pasteurised milk, and boiled milk. Children did not like boiled milk. No one had told them in a really authoritative way what was meant by pasteurisation. It was found also that in many cases those who did drink raw milk without contracting disease seemed to flourish more on the plain raw milk than upon milk that had been treated in any way. He could not persuade himself that our system of bottling, and so on, was really satisfactory in delivering pure milk to the child. There were so many opportunities of lapses. He believed that a great impetus would be given to dairy farming if the standards demanded were readily intelligible and easily carried out, if they became intelligent pupils and not the slaves of laboratory experiments made on the side of medicine, and if they were able to take a broader common-sense view of the whole situation.

LORD DENMAN said that the Ministry of Health recently circulated maternity and child welfare authorities asking them to review arrangements for the supply of milk to mothers and to young children. The Minister suggested that "scales should be framed as not to render it difficult for mothers to

take advantage of the authorities arrangements." A society which he (Lord Denman) represented complained that this instruction was too indefinite and that in some areas mothers and children under school age could not obtain free milk unless family income fell within a very low limit. In some cases the income, after deduction of rent for a family of five must be as low as 25s or even 22s 6d before free milk was granted. He hoped that the Minister might be able to issue more definite instructions on that point or that he might ask his Advisory Committee to draw up for the guidance of local authorities a scale based on the present knowledge of food requirements. The Minister's circular valuable as it might be in some respects went only a small way towards securing increased consumption of milk by mothers and young children.

Viscount GAO, replying for the Government said the investigations into nutritional problems fell into three simple categories—namely what the people ought to eat what they did eat and methods of improvement. The report of the Advisory Committee showed that certain foods especially milk, dairy products green vegetables and fruit were essential to health. They had protective value because they stopped certain definite deficiency diseases and also built up the resistance of the body to other forms of disease. It seemed difficult to exaggerate the importance attached by these experts with a unanimity rare among experts to the value of these protective foods, especially in infancy and the Government entirely accepted the conclusions of the report on that subject. It was satisfactory to know that the average consumption per head of most foodstuffs had increased since just before the war and that with one exception there had been a general improvement in the quality of the national diet. It was also satisfactory to know from the report that the supply of energy-giving foods available for the nation was more than was considered adequate by the Committee of the League of Nations. The Government fully accepted the recommendation of the Advisory Committee that much more information was desirable and they were prepared to collect it. But such inquiries were not always so easy as was sometimes imagined. What the Government had in mind was really a three-fold inquiry. There was first the Ministry of Labour inquiry in connexion with the cost of living index figure. For this it was hoped to procure the weekly budgets of 10,000 families taken over four separate weeks in various parts of England Wales and Scotland. These families would all come from the classes covered by the national insurance schemes. Naturally the inquiry would comprise information besides that relating to food but the special information relating to food would be summarised separately. Family budgets were made up as a rule in rather a rough and ready way. For certain purposes calculations of that sort might be quite sufficient but when they were trying to find out about the number of calories vitamins carbohydrates and so forth that were consumed they could not afford to be rough and ready. Accordingly they proposed to check these results by another inquiry called a "quantitative dietary survey" which would be of a much more detailed character. It was in fact already in progress and would eventually embrace 500 families of which 200 would come from Scotland. This might appear to be a small number but he would emphasise that a dietary survey of this kind meant that a qualified investigator had to spend much time in the homes of these families weighing up all the food which came into the house and what was left over estimating its composition down to the constituents even of the cakes and puddings and so forth and noting any wastage. He thought they ought to be grateful to these families for co-operating with their inspectors to the extent that they had done. He (Lord Gage) could not give the dates by which the whole inquiry could be completed but the results of the surveys which had already taken place at Newcastle-on-

Tyne, affecting 60 families had been published some months ago. There was another inquiry affecting 205 families in the West Riding the results of which would probably be published by the end of this year. These were not included in the 500 families which he had mentioned. An inquiry had already been begun in the Isle of Ely Surrey Glossop Aberdeen and certain industrial towns near Glasgow. It would be extended to Somerset Glamorgan Carmarthen Cardigan Aberdeen County Banff Kincardine Dumfries and the Border Counties. The next step after that would be to take out from the last census figures a definite proportion say of one in five hundred or one in a thousand of all the family census schedules and this they expected would show roughly after certain allowances had been made for altered conditions the distribution of the population according to occupation. These statistics would then be compared with information in the possession of the Ministry of Labour with regard to wage rates current in such occupations. It was hoped that on this basis they would be able to correlate to some degree all these inquiries and to present a working analysis of how the incomes of various classes of the community were divided, with special reference to food.

He would now return to the third and most controversial question of how they could improve. He admitted that three-quarters of the problem must turn on the capacity of the people to buy the right foods and that therefore food must be cheap. It was equally important that the people should have the wages to pay for the food. During their period of office the number of those in employment had increased by about 2,000,000. In one year over 2,300,000 had benefited from an increase of wages amounting to nearly £100,000 a week and the price of essential foodstuffs in spite of some rather wild statements to the contrary had during the last five years remained fairly steady. Following the unanimous advice of their experts the Government had been particularly active in connexion with the supply of milk on special terms to special classes of the community principally school-children expectant mothers and infants and unemployed in the distressed areas. There was also schemes for the provision of free and cheap food to similar classes. The scheme for providing school-children with cheap milk which started in 1934 had now been made available to 92 per cent of all the school-children in the country and 2,000,000 school-children were making use of the scheme. Free food might also be supplied to any child showing signs of requiring it though certain safeguards obviously had to be observed in this connexion. Over 400,000 children received free milk last year and 2,000,000 free meals were consumed by 14,100,000 children. About £700,000 was paid to the local authorities by the Government in specific grants towards these schemes. As to the mothers and infants at all antenatal and child welfare centres and at all antenatal clinics free food and milk might be supplied under medical advice to necessitous cases special attention being paid to malnutrition rickets and so forth. There had been a large extension of these centres in the last few years and the attendances had greatly increased. Two hundred and ninety-seven thousand mothers now attended the clinics. Last year the equivalent of about 7,000,000 gallons of milk were distributed free or at less than cost price according to the means of the applicants. Schemes for cheap milk had been adopted in the Special Areas the cost of which was borne in part by the Councils alone instead of by the local authorities.

As to the future he could undertake that the Government would press forward with all these schemes to the best of their ability. They had recently issued a circular inviting all the local authorities to review their arrangements under the Maternity and Child Welfare Acts and to improve and increase their diet and especially the milk diet of expectant mothers and children. They had also laid emphasis on the

necessity for securing the purity of the milk. A publicity campaign was contemplated in the autumn to make better known the existence of the facilities available at welfare centres. The Government had also put another £5,000,000 into the general pool available under the block grant scheme and by the reweighting of the formula they felt that the necessitous local authorities would be placed in a better position to bear their part of the financial burden. In conclusion he would like to say one word of what he might call subdued optimism. In the seventies of last century there was a death-rate of 21.4 per 1000. In 1930 the death-rate was 12.1 per 1000. In the nineties the death-rate of children under one year was over 150 per 1000. By 1930 this figure had been reduced to 59 per 1000. The death-rate from tuberculosis was less than half what it was twenty-five years ago, and from rickets less than half what it was five years ago. Of the 1,700,000 children inspected by school medical officers during 1930 the nutrition of 14.6 was said to be excellent, 74 per cent were normal, 10.5 per cent slightly abnormal, and 0.7 per cent bad. These figures, he thought, showed that this country was making real progress, and were a general encouragement to further effort. The Minister of Health had shown the profound interest which he took in the problem of nutrition. Setting aside all questions of human sympathy, a vast amount of administrative effort which was now being spent on the cure and care of disease would obviously be immensely reduced if illness could be prevented as the experts claimed it could be, by better nutrition. The Government had to assist them bodies of unimpeachable reputation such as the Medical Research Council and the Advisory Committee on Nutrition presided over by Lord Luke. All these factors seemed to indicate that if prosperity could be maintained progress in nutrition would also be maintained with increasing impetus.

VISCOUNT ASTOR, in congratulating the Government on what they had done, urged them not to sit back satisfied, but to realise that there was still a great deal that required to be done.

The motion for Papers was withdrawn.

CONTRIBUTORY PENSIONS (VOLUNTARY CONTRIBUTORS) BILL

On the motion for the third reading of the Widows', Orphans', and Old Age Contributory Pensions (Voluntary Contributors) Bill in the House of Commons on May 6th,

SIR KINGSLEY WOOD, Minister of Health, said that this scheme had a very wide popular appeal and it would fill a definite gap in our existing social insurance system. So far as the insurance provisions were concerned, the Bill provided the best and cheapest and safest policy of the kind in the world. He hoped that it might soon be possible to introduce another measure which would fill another gap. The Government had already announced their intention to introduce national insurance legislation to entitle boys and girls to receive medical benefit immediately on taking up employment after leaving school instead of having to wait until the age of 16 as at present. The introduction of this measure had been postponed pending the settlement of the terms of remuneration of the medical practitioners. That question was going to be settled, he hoped, quite amicably and certainly by agreement, between the medical practitioners and himself by an arbitration court at an early date. He desired to see a good many gaps filled, but they had to recognise that the social protection of the people must be an evolutionary process. There were in Great Britain to-day more than 19,000,000 persons insured under the Contributory Pensions Acts and if their dependents were taken into account it might be said that 75 per cent of the population were protected by this scheme. Already 4,250,000 persons had participated in the pensions and allowances, and £350,000,000 had been

paid out in benefits to persons under 70, while a further £170,000,000 had been paid to persons over 70 entitled to pensions by virtue of the Contributory Pensions Acts. The Exchequer contribution to the cost of pensions payable to persons under 70 was no less than £15,000,000 during the financial year 1936-37 alone. These contributions rose by £1,000,000 a year to £21,000,000 in 1942-43, at which figure they would remain until 1945-46, after which Parliament was to determine the further subventions required. The cost to the Exchequer in 1936-37 of pensions to those over 70 payable by virtue of the Contributory Pensions Acts was approximately £25,000,000 and the cost of the pensions to people over 70 payable under the Old Age Pensions Acts by reference to means was approximately £18,400,000. To those figures must now be added the considerable cost of this new scheme. If there were 700,000 entrants—and he would be disappointed if there were not—then, if they excluded the consideration of the financial commitments in respect of pensions for those over the age of 70, the Exchequer liability would be £43,000,000. They could legitimately claim that no country made such a financial contribution as we did or had a wider range of social protection for its people.

The Bill was read the third time and passed.

NOTES ON CURRENT TOPICS

In the House of Lords on May 6th the Royal Assent was given to the Local Government (Financial Provisions) (Scotland) Act, the Maternity Services (Scotland) Act, and the General Cemetery Act.

Both Houses of Parliament adjourned on May 6th for the Whitsuntide recess. The House of Lords will reassemble on May 25th and the House of Commons on May 24th.

QUESTION TIME

THURSDAY, MAY 6TH

Coöperation between Public and Voluntary Hospitals

MR SORENSON asked the Minister of Health whether, in view of the report of the Voluntary Hospitals Commission and of the increasing contributions by public authorities to voluntary hospitals, he would require that the finances of voluntary hospitals should be pooled and that greater coöperation should be effected between voluntary and public hospitals.—SIR KINGSLEY WOOD replied: I have noted with interest that the Voluntary Hospitals Commission, while not recommending the immediate pooling of hospital finances, suggests the creation of regional funds, but I have no powers in this matter, which is one for consideration by the governing bodies of the hospitals. I may assure the hon. Member that I shall continue to encourage coöperation between voluntary and public hospitals, which, I am glad to say, is already increasing steadily.

Cleanliness in Handling of Bread

SIR NICHOLAS GRATTAN DOYLE asked the Minister of Health whether, after the introduction of the recently announced legislation to provide that milk for human consumption should be clean and bacteriologically pure, he would consider means by which to ensure that bread for human consumption, whether in course of distribution or whilst held for sale, should at all times be covered or wrapped in dust proof material to reduce uncleanness by handling.—SIR KINGSLEY WOOD replied: I appreciate the advantages from the point of view of cleanliness of the wrapping of bread but on the information before me I am not satisfied that a general requirement on the subject is necessary.

MATERNITY CLINIC FOR SUNDERLAND.—Sunderland health committee have approved in principle a scheme for erecting a maternity clinic in the east end of the town. An application will be made to the commissioner of the Special Areas for a grant towards the estimated cost of £10,000.

PUBLIC HEALTH

Circular on Maternal Mortality Report

IN a circular (No 1622) addressed to maternity and child welfare authorities on May 7th the Minister of Health draws attention to the report on maternal mortality summarised in THE LANCET last week (p 1126) especially to the recommendations emphasising (1) the importance of team work (2) consultant services (3) emergency units (4) maternity accommodation (5) antenatal services (6) postnatal services (7) auxiliary services (8) the keeping of records (9) education. The Minister notes that recommendation (2) in section A of the report contemplates that each local supervising authority under the Midwives Acts should in consultation with the local medical profession be empowered to take steps to ensure that the best local obstetric skill is made available in all cases in which midwives are required to call in a doctor. An alteration in the rules of the Central Midwives Board would be required before effect could be given to this recommendation and the Minister has asked the Board to consider the recommendation. He is also inviting the views of the associations of local authorities concerned and of the British Medical Association on this recommendation (see below). As to the three subjects recommended in the report for further study the Minister is in communication with the Medical Research Council on the suggestions that further research should be undertaken (a) with a view to the discovery of a reliable prophylactic treatment for puerperal sepsis, and (b) into the possible influence of the dietary upon childbearing. With regard to the third subject recommended for further inquiry that of abortion the Secretary of State for the Home Department and the Minister are appointing a committee to inquire into the prevalence of abortion and to consider the steps necessary to secure the reduction of maternal mortality and morbidity arising from this cause. The Minister asks each authority to give early consideration to the report and to the suggestions made in the circular and inform him of the action they propose to take.

THE VIEWS OF THE BRITISH MEDICAL ASSOCIATION

The British Medical Association has already in an addendum to the annual report of their council published in the Supplement to the *British Medical Journal* of May 8th said that the suggested amendment of the rules of the Central Midwives Board is not one that could be approved or supported by the Association. The proposal that midwives in the future would in cases of emergency be able to call for the services only of certain selected practitioners and that local authorities should be advised and encouraged to make such selective lists would in the opinion of the Association aggravate the disadvantages of the present situation. They call attention to three inconsistencies which might immediately arise.

(1) Many insurance practitioners would be by statute charged with the duty of attending or accepting responsibility for insured women from the time conception took place up to the moment that labour pains began and again from ten or fourteen days after delivery while they would be prohibited if the mother wished to take advantage of State provision from having any thing to do with her in the intervening period.

(2) There would be practitioners in some areas freely available for attendance in the case of midwifery emergencies while in a neighbouring area they might

be debarred from any such attendance owing to alleged incompetence or inexperience.

(3) In one area in 3 per cent of all confinements the emergency was such as to require the immediate attendance of a practitioner in order to save the life of mother or child so that in many rural areas the midwife might by rule be prohibited from calling in the most easily available practitioner.

An alternative plan which the council of the Association greatly prefers and would urge upon the Minister is that each local authority should prepare a list of local medical practitioners who are willing to make themselves available to be called in by midwives that such practitioners collectively should at once be brought into close touch with the consultant obstetricians recognised for the service in the area and should be kept in frequent association with those consultants with a view to the appreciation of their several spheres of action to instruction as to the proper course of action and the means of securing appropriate help in cases of difficulty and to the mutual and confidential investigations as to the causes of difficulty or of death. If thought necessary it might be arranged that if a practitioner's name was to continue on the list beyond a certain period of years he should have to undertake a more formal post-graduate course in obstetrics and it might be possible to establish some machinery by which the name of a practitioner whose work proved unsatisfactory might be removed from the list. In some such way as this the council believes that local lists would be established in a less objectionable and less difficult way than in any other and that the lists so established under these conditions would prove to be more satisfactory and successful in maintaining an adequate service. The council suggests that such it is should be established at the time or shortly after the time at which the Midwives Act comes into operation.

Supervision of Midwives

With another circular (1620) the Minister encloses for the information of local supervising authorities under the Midwives Acts (England) copies of the regulations¹ which he has made prescribing the qualifications of persons appointed to exercise supervision over the midwives practising in their areas. The regulations will come into operation on June 1st next and apply only to persons appointed as supervisors of midwives on or after that date. The object of the regulations is to ensure that persons appointed in future to supervise midwives shall have had adequate experience in the practice of midwifery. In order that an inspector of midwives should be regarded as the counsellor and friend rather than a relentless critic the persons appointed should not only possess the necessary professional qualifications but also the essential qualities of sympathy and tact. The title of inspector of midwives will be superseded by that of supervisor of midwives which is that used in the regulations. The regulation prescribe qualifications for a medical supervisor and a non-medical supervisor and it is within the discretion of each authority to appoint either one or the other or both. In large areas it appears to the Minister desirable to appoint a medical supervisor acting under the direction of the medical officer of health to exercise general supervision over the

¹ Statutory Rule and Order No. 1937 No. 294. The 311th of the Qualifications of Supervisors Regulations 1937 dated April 29th 1937.

midwives practising in the area, and non medical supervisors to work under the instructions of the medical supervisor and perform the routine duties of supervision

A medical supervisor is defined as a registered medical practitioner who has had at least three years' experience in the practice of his profession, and who (1) is registered as the holder of a diploma in sanitary science, public health, or State medicine, (2) has held the appointment of resident medical officer in a maternity department for a period of not less than six months, and (3) within a period of two years before his first appointment as a medical supervisor under the provisions of these regulations had had not less than one year's continuous experience in some branch of obstetric work. The Minister may dispense with any of the requirements of these regulations in any case in which it appears to him desirable so to do, on such terms and conditions as he thinks fit. The Minister appreciates that at the outset it may be difficult in some cases to secure medical supervisors who possess all these qualifications and if necessary he will be prepared to consider the question of using his dispensing power. He points out, however, that the words "some branch of obstetric work" have a wide range, and include the conduct of ante natal clinics, the duties of administrative officers in a maternity department, the investigation or treatment of puerperal fever, obstetric research, and so forth.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 1ST, 1937

Notifications—The following cases of infectious disease were notified during the week. Small pox, 0 scarlet fever, 1828, diphtheria, 1010, enteric fever, 26, pneumonia (primary or influenzal) 886, puerperal fever, 38, puerperal pyrexia, 99, cerebro-spinal fever, 30, acute poliomyelitis, 2, acute poli-encephalitis, 1, encephalitis lethargica, 5, dysentery 14, ophthalmia neonatorum, 102. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 7th was 3069 which included scarlet fever 799, diphtheria 866, measles 55, whooping-cough, 505, puerperal fever, 16 mothers (plus 11 babies), encephalitis lethargica 233, poliomyelitis 0. At St Margaret's Hospital there were 21 babies (plus 10 mothers) with ophthalmia neonatorum.

Deaths—In 123 great towns, including London, there was no death from small-pox or from enteric fever, 18 (0) from measles, 3 (0) from scarlet fever, 18 (4) from whooping-cough, 30 (3) from diphtheria, 48 (12) from diarrhoea and enteritis under two years, and 33 (3) from influenza. The figures in parentheses are those for London itself.

Five deaths from diarrhoea and enteritis under two years were reported from Liverpool, and 3 each from Manchester and Newcastle upon Tyne. Birmingham had 5 deaths from measles. Sheffield and Bradford each reported 3 fatal cases of diphtheria.

The number of stillbirths notified during the week was 284 (corresponding to a rate of 41 per 1000 total births), including 40 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Capts J H Burdett to *Pembroke* for R N Hosp, Chatham, and J D Danson to *Victory* for R N Hosp, Haslar.

Surg Lt Comdrs J B Patrick to *President* for course, and C D D de Labilliere to *Pembroke* for R N B.

Surg Lts G C Denny to *Excellent*, W B Taylor to *President* for course, J G Vincent Smith to *Pembroke* for R M Infirmary, Chatham, I C Macdonald to *Pembroke* for R N B, and D Simpson to *Victory* for R N Hosp, Haslar.

F B Gamblen and J B Knight entered as Surg Lts (D) for short service, and appointed to *Victory* for course of instruction at R N Hosp, Haslar.

The following have been appointed Admiralty Surgeons and Agents—

Mr J W Ross (Darlington) for Darlington, Mr T C Gipson (Pinhoe Exeter) for Exeter, and Mr R Anderson (Helensburgh) for Helensburgh.

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt Comdr (D) G P Monk placed on Retd List
Surg Sub Lt R F Hand promoted to Surg Lt

ROYAL ARMY MEDICAL CORPS

Cpts A McMillan and W G S Foster to be Majs
Lts C P Stevens and J A G M Lynch to be Cpts

SUPPLEMENTARY RESERVE OF OFFICERS

J Robertson to be Lt

ARMY DENTAL CORPS

Capt A Brazenor to be Maj
Short Service Commission E A Moore to be Lt (on prob)

MILITIA

Maj R D Goldie relinquishes his commn and retains the rank of Maj

TERRITORIAL ARMY

Capt E J G Glass to be Maj
T Fitt (late Cadet Serjt, Rossall Sch Contgt, Jun Div, OTC) to be Lt
R H Barnes (late Cadet Serjt, Bedford Sch Contgt, Jun Div OTC) to be Lt
J D Finlayson (late Offr Cadet, Aberdeen Univ Contgt (Med Unit), Sen Div, OTC) to be Lt

TERRITORIAL ARMY RESERVE OF OFFICERS

Lt A Wilson from T A Res of Off (5th Bn Border R) to be Lt (Army Dental Corps)

ROYAL AIR FORCE

Squadron Leaders H W Corner to R A F Depôt Uxbridge, for duty as medical officer, J Hutchingson to R A F Station, Dhibban, Iraq, for duty as Senior Medical Officer, and G W Paton to Aircraft Depôt, Hinaidi, Iraq, for duty as Senior Medical Officer.

Flight Lt R C H Tripp to R A F Station, Upper Heyford.

Flying Offr F L Whitehead is promoted to the rank of Flight Lt.

INDIAN MEDICAL SERVICE

Majs to be Lt -Cols S N Makand, S C Alagappan, and B R Chaudhri.

Capt M P Conroy to be Maj

The undermentioned officers have vacated appts in India—

D.D.M.S. Maj Gen C W F Melville, C.B., K.H.P., I.M.S., and retires.

A.D.M.S. Col I M Macrae, C.I.E. O.B.E., K.H.P., I.M.S., and Maj Gen W H Hamilton, C.I.E., C.B.E., D.S.O., K.H.P., I.M.S.

A.D.H. and P. Lt Col J B de W Molony, O.B.E., I.M.S.

D.A.D.P. Major J S Riddle I.M.S.

The undermentioned appts have been made in India—

D.D.M.S. Maj Gen W H Hamilton and Col I M Macrae.

A.D.M.S. Col A F Babonau, C.I.E. O.B.E., I.M.S.
D.A.D.P. Maj H T Findlay, R.A.M.C.

COLONIAL MEDICAL SERVICE

The following appointments have been made. Dr E N Brockway and Dr C J Fournier (M.O. Bermuda) Medical Officers, West Africa, Miss E Cardwell L.R.C.P. and Dr H J Birmingham (M.O. Gambia) Medical Officers, Gold Coast, Dr R H Purnell, Medical Officer and Dr J A Acheson (M.O.) Senior Medical Officer, Northern Rhodesia, Dr A A Cameron Medical Officer, Malaya and Surg Lt S R G Pumm, Medical Radiologist, Colonial Hospital, Port of Spain, Trinidad.

OBITUARY

BENNETT MAY C.B.E. FRCS Eng

EMERITUS PROFESSOR OF SURGERY UNIVERSITY OF BIRMINGHAM

His death occurred on May 3rd of Mr Bennett May emeritus professor of surgery in the University of Birmingham and one of the oldest members of the medical profession having reached the advanced age of 82. He died at his house in Edgbaston.

Prof May was the son of Benjamin May an official of the Inland Revenue and was educated at Sydenham College before proceeding to the University of Edinburgh for his medical education. He graduated as M.B. B.S. Lond. in 1875 and took the FRCS Eng. in the following year. He then became resident surgical officer at the Birmingham General Hospital at the termination of which appointment he became assistant surgeon to the Queen's Hospital Birmingham. His association with the University of Birmingham then Mason College began as a demonstrator in anatomy but his surgical work soon brought him a large consulting practice while he was invited to fulfil important appointments outside Birmingham such as surgeon to the Smallwood Hospital Redditch the Guest Hospital Dudley and the Tamworth Hospital. He was appointed demonstrator of operative surgery at Mason College and on the establishment of the University of Birmingham became professor of surgery in the University. He made now some important clinical contributions to medical literature writing in the *British Medical Journal* on the ligature of arterial trunks and to these columns valuable clinical notes among others a description of distal ligature of the common carotid and axillary arteries for aneurysm and one for the excision of a tumour of the cerebellum. In 1897 he delivered the Ingley lectures on the operative treatment of cancer of the breast the lectures being afterwards published in volume form. During the war despite his seniority he gave outstanding service at the Rubery Hospital.

Prof May was a widower and leaves no family. During the last years of his long life he was invalided by arthritis.

Sir Gilbert Barling sends the following tribute to Prof May's work and his personality: Bennett May commenced his medical studies as long ago as 1864 at the Sydenham College which was attached to the General Hospital Birmingham. In 1870 he was appointed to the valuable post of resident surgical officer with the supervision of all the surgical beds a position which he filled for three years and which formed the foundation of all his future success. He came to the practice of his profession in what may be called the transitional period when later a early teaching began to have its influence and at a time when laudable pus was almost regarded as a compliment to the surgeon and when all surgical operations were approached with an anxiety difficult to appreciate now for the threat of bad sepsis and even hospital gangrene was always present. And no wonder when amongst other detrimental conditions the surgeon was generally garbed in an old coat soiled with blood or even pus. May unlike his older predecessors was guided in his work by Lister's teaching that is he adopted the antiseptic system but hardly the minutiae of asepsis. To his disappointment he failed to secure a post as assistant surgeon to the General Hospital but found his opportunity at the Queen's Hospital when he was elected surgeon in 1881 and here he soon showed his worth. Rather a slow operator he was most pains-

taking and thorough his opinions were very reliable and he gave confidence to members of the profession who sought his advice in consultation. He taught anatomy at Queen's College and eventually became professor of surgery in Mason College and the University of Birmingham where I was his co-professor and I more than ever learnt to appreciate him as an excellent colleague and a very honourable man. He was at times a little eccentric in his mannerisms and students did not fail to exploit these but despite peculiarities he acquired the respect indeed the affectionate regard of those he taught.

During the war I had special reason to be grateful to him. In 1915 I organised two war hospitals in Birmingham and eventually these provided nearly 2000 beds. At that time it was not easy to secure an adequate surgical staff as nearly all the general surgeons in Birmingham were either on service abroad or attached to the 1st Southern T. Hospital. May had entirely given up practice and was then 70 years of age but at my request he took charge of a large section of beds and simply devoted himself to looking after them. For his services he was given the C.B.E. In his later years he was greatly crippled by arthritis indeed he was bedridden during the last five years this and his increasing deafness cut him off from his friends and he became very solitary. His death came as a real relief from distress he will long be remembered with affection.

SIR GEORGE WASHINGTON BADGEROW
C.V.O. C.M.G. MD Toronto F.R.C.S. Edin

The sudden death occurred on Sunday last of Sir George Badgerow a laryngologist equally well known in this country and in his native country of Canada. He was born in 1872 the son of Mr Harrington Badgerow of Toronto and was educated at Upper Canada College and the University of Toronto. He received his medical training partly at the Toronto General Hospital and partly at the University of Edinburgh and he was also a student at the Middlesex and University College Hospitals. He took the English double qualification in 1903 and two years later graduated as M.B. Toronto with honours proceeding to the M.D. degree in 1909 and taking the diploma of F.R.C.S. Edin in 1910. He early decided to specialise in diseases of the throat nose and ear and became chief clinical assistant in the department at University College Hospital. He then acted as clinical assistant and registrar at the Throat Hospital Golden Square becoming later resident medical officer posts which he held from 1903-08. He made during this period and later practical contributions to the literature of his subject describing in our



Photograph by E. and J. Fry

SIR GEORGE BADGEROW

columns several ingenious appliances useful in operative treatment, while he wrote in the *Practitioner* and also in *The Lancet* on the types of pharyngeal suppuration and on the general relation of diseases of the throat, nose, and ear to constitutional disease. He was appointed surgeon to the Golden Square Hospital and acted also as dean. He did fine service during the war as lieutenant colonel in the Canadian Army Medical Corps, both in the field and in institutional positions. He was mentioned twice in dispatches and at the conclusion of hostilities received the C M G. He was consulting surgeon to the Ontario Military Hospital, Orpington, to the Duchess of Connaught Red Cross Hospital, Cliveden, the King's Canadian Hospital, Bushey, and the Officers' (Daughters of the Empire) Hospital. He was a member of the Imperial War Graves Commission. In 1928 he was knighted and in 1930 was appointed C V O.

Sir George Badgerow was active in many provinces of his speciality. He was honorary surgeon for the diseases of the throat, nose, and ear to the Royal Normal College for the Blind, to the Livingstone Hospital, Dartford, and to the Warehouse Clerks and Drapers' Schools, Purley; he was a member of the Education Committee, L C C., of the Residential Open Air School in Bushey Park, and consulting surgeon to the Reedham Orphanage. It will be readily understood how well known he was in his profession as well as to all Canadians resident in or visiting England. He married Maud, daughter of Mr Herbert Oxley, who died recently, and leaves a son and a daughter. His death was tragically sudden; he collapsed in a taxi cab and was found unconscious at Waterloo Station. Conveyed to St. Thomas' Hospital he was found to be dead. He was 64 years of age.

CORRESPONDENCE

CONTINUOUS VENOUS HUM IN CIRRHOSIS OF THE LIVER

To the Editor of THE LANCET

SIR,—In your issue of May 8th Dr J L Bates records an interesting case of continuous venous hum in cirrhosis of the liver, the exact cause of which has not yet been confirmed at autopsy.

Some years ago I had under my care at the Sheffield Royal Hospital a case of cirrhosis of the liver with a somewhat similar localised venous hum. In my case it was possible to correlate the physical signs in life with the findings at autopsy. The loud and continuous venous hum in the earlier stages (1916) extended over the xiphisternum up to the level of the third costal cartilage with an area of maximum intensity over the former. Five years later (1921), when the ascites had all disappeared, the sound was sharply circumscribed to an area covered by a half-crown at the right of the sternum opposite about the sixth chondrosternal junction. At autopsy in 1924 there was a monolobular cirrhosis. The left portal vein was much dilated and communicated by a circuitous course through the round and falciform ligaments with the right internal mammary vein, which showed marked varicose dilatations. As this vessel was lying immediately under the place where the venous bruit was of maximum intensity, it seemed, on these grounds alone, to be the most likely source of the sound, and this view was supported by the sudden variations in diameter of its lumen, from narrow to wide, thus providing the requisite physical conditions which Dr Bates mentions—namely, “the passage of blood through a constricted lumen into a relatively dilated channel.”

An almost exactly similar condition was found in a case of Ogle's, quoted in Rolleston's text book (1912 edition), and apparently others of a somewhat similar kind to that described in Dr Bates's interesting record have been added in the later edition, to which I have not had an opportunity of referring. An account of my case, during life, was published in the *British Medical Journal* for April 15th, 1922.

I am, Sir, yours faithfully,

ARTHUR J HALL

Sheffield May 7th

PERNICIOUS ANÆMIA IN AN INFANT

To the Editor of THE LANCET

SIR,—Dr Smallwood's letter, in which he questions the correctness of the diagnosis of pernicious anæmia in the infant whose case was recorded by Langmead

and Doniach in your issue of May 1st, does not mention whether any of his cases of acute or sub-acute hæmolytic anæmia showed achlorhydria following injection of histamine. Of the previously recorded cases of pernicious anæmia in infants, few, if any, have fulfilled all the postulates required in the diagnosis of this disease. The case recorded by Langmead and Doniach fulfils all of them. Should the infant, at a later date, be able to thrive without liver therapy, it could reasonably be maintained that the syndrome had been caused by a temporary cessation of ability either to elaborate, or else to absorb the antipernicious anæmia factor. An analogous situation may arise in colic disease. The criteria of the diagnosis of pernicious anæmia, quoted by Langmead and Doniach, could have with advantage suggested achlorhydria following histamine injection.

I am, Sir, yours faithfully,

London, W 1, May 7th

J C HAWKSLEY

PRURITUS ANI

To the Editor of THE LANCET

SIR,—In recent issues of your paper I read interesting references to this subject, and it seems obvious that the treatment of pruritus ani is still wrapped in obscurity. I wrote to *THE LANCET* in 1923 (Sept 29th, 1923, p 678) recording the treatment which had been successful in my own case many years before. I then consulted Sir Charles (then Mr) Gordon Watson who held the view that the cause of this trouble lies in the papillæ of Morgagni, which situated at the anorectal junction, are absent in the majority yet present in a considerable proportion of individuals. They are normally small white glistening papillæ, pyramidal or triangular, with the apices directed upwards and inwards towards the lumen of the gut. They vary from one to six, and when hypertrophied resemble in size and shape the writing end of an ordinary lead pencil, when much hypertrophied they may be felt as small shotty nodules. In some cases one finds small fibrous branched papillæ as well, and I think it is advisable to destroy these also as they may possibly be an additional source of irritation. In my own case, Sir Charles Gordon Watson destroyed these hypertrophied papillæ with the electric cautery. This was done without even a local analgesic and was not very painful. The itching, which had become unbearable, disappeared.

¹ Parsons L G and Hawksley J C (1933) *Arch Dis Child* 8 117

at once like magic and I remained absolutely free for about five years. There was then a slight return occasionally but carbolic vaseline kept it in check. Later on as the pruritus had again become rather troublesome I was examined by a surgeon having first told him what he would probably find. He destroyed five or six papillae with instantaneous results and has since treated four similar cases with equally good effects. The reappearance of a papilla is in my case always attended by a return of the pruritus and discharge of irritating mucus which rapidly causes the skin to inflame.

I would add now that I have found that repeated cauterisations of the papillae of Morgagni deprive one of the sensitive area which gives warning of the presence of a stool at the anal orifice and occasionally if one had diarrhoea an accident was likely to occur. This is of course one of the results which is apt to follow Whitehead operation for piles or prolapse of the rectum.

I am, Sir, yours faithfully

Tangier May 1891 I I W PORTER
Majr R M C retired

FREE MILK AND CHEAP MILK

To the Editor of THE LANCET

SIR—Following the report of the Advisory Committee on Nutrition the Ministry of Health last month circulated maternity and child welfare authorities asking them to review their arrangements for the supply of milk and other foods to mothers and young children. May we comment on some of the issues involved?

In many areas pregnant or nursing mothers and children under school age cannot obtain free milk unless the family income fall beneath a very low level. We know of authorities where the income (after deduction of rent) for a family of five must be as low as 25s or even 22s 6d a week before free milk is granted. But the circular in urging that scales should be so framed as not to render it difficult for mothers to take advantage of the authorities' arrangements does not itself suggest any basis on which this should be done. Such a basis might be found in the British Medical Association's estimate of the minimum costs of satisfying food requirements as revised to conform with the milk recommendations of the Advisory Committee on Nutrition. If however the Minister feels that he cannot accept these estimates we suggest that he should ask the Advisory Committee itself to draw up for the guidance of local authorities a scale based on the present knowledge of food requirements. Estimates for necessities other than food such as have been used in the various social surveys could be added and the scale adjusted to changes in prices from time to time and place to place.

The report of the Advisory Committee indicates that on health grounds milk (or its equivalent in other protective foods) is necessary for all pregnant and nursing mothers and young children. However under most local authorities even after a stringent income test has been satisfied milk and other foods are only supplied free if clinical symptoms are discovered showing the need for additional nourishment. Should not local authorities be asked to provide free milk wherever the income available for expenditure on food is insufficient and thereby anticipate the dangers of undernourishment before health is actually impaired?

The Minister's circular which seeks to implement the report of the Advisory Committee is valuable in

encouraging local authorities to remove some of their restrictions; but further measures will undoubtedly be required if we are to secure that largely neglected consumption of safe milk by mothers, children and adolescents which the Committee states would do more than anything else to improve the health development and resistance to disease of the rising generation.

The onus for extending the provision of milk remains on the local authorities who will have to pay the whole cost of such an extension out of the rates. It is true that the poorer authorities have benefited by the recent revision of the Milk Grant but such relief is required for many purposes including the reduction of rates raised to unprecedented height by years of severe unemployment.

Measures on an extensive scale will be needed if the hope of the Advisory Committee that a supply of safe milk to the amount we have recommended is brought within the purchasing power of the poorest is to be fulfilled. These amounts are 2 pints a day for expectant and nursing mothers and from 1 to 2 pints a day for each child. With milk at 3d a pint a family in which there were three children taking say 13 pints a day and a mother taking 2 pints would have a bill of 13s 3d a week. Such an expenditure is as recent surveys show quite beyond the means of most working class families with young children.

At present about one third of the milk produced is sold for manufacture at an average subsidised price of 5d a gallon whereas it is only available for liquid consumption at a price which puts a sufficient quantity for health beyond the reach of many families. It is understood that the Government are considering a scheme for extending the provision of cheap milk to mothers and children under school age. We very much hope that a result of the report of the Advisory Committee will be its early initiation.

We are, Sir, yours faithfully

J D ACARD
SUSAN LAWRENCE
LEANOR F RATHBON
DUNCAN SANDY

The Children's Minimum Council, 11, Horse Cross Road
London W 4 1 May 1931

PRISONERS AND CAPTIVES

To the Editor of THE LANCET

SIR—Despite your mental hospital correspondents who so vigorously championed the statutory hospital against Taddygaddy in your issue of May 1st is there not a subtle difference? Is it perhaps a matter of the limelight focused on the voluntary institutions owing to the continual fight for funds? The public develops an almost parental feeling of responsibility; not only does it support financially, it protects, cherishes even exiles. Statutory hospital still confronts the locked door the inferiority stigma has not yet vanished. The governing bodies are criticised with a difference; members of county or borough council must be rationed out over the word to be done and the hospital committee may perhaps be the Cinderella that gets the beatings. At any rate there seems to be less opportunity for detailed intercourse, informal knowledge, personal contact; they all have too much to do.

At a recent opening of a municipal hospital the equipment shown was superb but where were the local doctors and their wives and their friends? It was a different crowd; it nearly always is. If

Taddygaddy and your correspondent are both right surely an urgent and immediate task ahead is to find a way of amalgamating "atmospherics" or at least of demonstrating that no real difference need exist

I am, Sir, yours faithfully,

ESTHER CARLING

Berks and Bucks Joint Sanatorium, Oxon, May 6th

To the Editor of THE LANCET

SIR,—Taddygaddy fain would raise a storm Will there be pennies from Heaven? Authority, in spite of all the gossips, is not too mean a deity

There is, of course, much of truth in Taddygaddy, much to welcome Nevertheless, whensoever we seek to preach thus freedom, ought we not first to ask with Nietzsche "Freedom for what?"

I am, Sir, yours faithfully,

Birmingham, May 10th

H FREIZE STEPHENS

INSULIN SHOCK TREATMENT OF SCHIZOPHRENIA

To the Editor of THE LANCET

SIR,—In the excellent account of insulin shock in schizophrenia given by James, Freudenberg, and Cannon in your last issue, the question of depth of coma arises Coma is rightly defined as a period of unconsciousness, but the differentiation of depths of coma is rather at variance with that set out in Dr I G H Wilson's report and so may lead to confusion James and his collaborators define coma as "unconsciousness," deep coma being characterised by loss of corneal and plantar reflexes and also by hypotonus Dr Wilson describes "light coma," coma with restlessness and all reflexes present, coma proper, in which hypo or hyper tonus is seen and in which the corneal reflex is absent, "deep coma," in which the pupillary light reflex is lost I feel that this difference should be emphasised, as any attempt to prolong this latter form of deep coma for the 1½ hours permissible for the deep coma of James, Freudenberg, and Cannon would undoubtedly be disastrous

The "coma" mentioned in the very brief note on method in my report on cases, being unqualified, simply means "period of unconsciousness" When this is 2½ hours it is usual to find, with proper dosage of insulin, that 1 hour is spent in light coma and 1½ in coma proper I cannot agree that hypertonus in general extension is an imperative indication for interruption and have frequently seen this and allowed hypoglycæmia to continue for the usual length of time some cases have shown this daily

I am, Sir, yours faithfully,

LEONARD W RUSSELL

St Bernard's Hospital Southall May 10th

EAST HAM MEMORIAL HOSPITAL—This hospital is now free from debt for the first time in its history In 1935 it had a deficit of £18 000, half of this sum was given by Lord Bethell the president and the other half by the public A new children's ward is required and Lord Bethell has offered to meet half its cost in commemoration of the Coronation

NATIONAL HOSPITAL FOR NERVOUS DISEASES—Princess Alice Countess of Athlone has laid the foundation stone of the extensions to this hospital which have been made possible by a grant from the Rockefeller Trust The extensions will be devoted to the work of the clinical research unit, while facilities for neurosurgical work and some small wards for paying patients will also be provided

CORONATION HONOURS

THE list of honours bestowed by the King at his Coronation contains the following names of members of the medical profession —

Baron

The Rt Hon Christopher Addison, F R C S
First Minister of Health (1919-21)

Baronet

Sir Cuthbert Wallace, K C M G, C B, M B
President of the Royal College of Surgeons

K C B

Edward Mellanby, F R C P, F R S
Secretary of the Medical Research Council

K C V O

Sir John Atkins, K C M G, F R C S
Physician in Ordinary to the Duke of Connaught
George Frederic Stall, F R C P
Consulting physician for diseases of children, King College Hospital

K B E (Military)

Air Vice Marshal Alfred Wilham Iredell, C B
M R C S, K H P
Director of medical services, Air Ministry

K B E (Civil)

The Hon John Richards Harris, M D
Minister of Public Health, Victoria

Knights Bachelor

Arthur Edwin Horn, C M G, M R C P
Consulting physician to the Colonial Office
Arthur Frederick Hurst, F R C P
Senior physician to Guy's Hospital
Harold Beckwith Whitehouse, F R C S
Professor of midwifery University of Birmingham

C B (Military)

Surgeon Rear Admiral G L Buckenridge, O B E,
M R C S, K H S
Major General W H Hamilton, C I E, C B E, D S O,
F R C S, K H P, I M S
D D M S, Northern Command India
Major General Osburne Ievers, D S O, M B, K H S
D D M S Southern Command
Major General H Marrian Perry, O B E, L R C P J,
K H S
Director of Royal Army Medical College
Air Commodore A V J Richardson, O B E, M B,
K H S

C B (Civil)

John Harry Hebb, C B E, M B
Director general of medical services, Ministry of Pensions

C M G

Robert Henry Hogg, O B E, M B
President of New Zealand branch of B M A

C I E

Lieut Colonel Ronald Herbert Candy, M B, I M S
Civil surgeon, Poona
Ernest Muir, M D, F R C S E
Secretary, British Empire Leprosy Relief Association

Lieut Colonel Clive Newcomb D.M. F.R.C.S.
Principal of the Medical College Malacca

Colonel John Taylor D.S.O. M.D. V.H.S. I.M.S.
Director of Central Research Institute Kasauli.

C.B.E. (Military)

Surgeon Captain William Bradbury D.S.O. V.B.
R.N.

Colonel John Heatly Spencer O.B.E. F.R.C.P.
K.H.P.
Professor of tropical medicine R.A.M. College

C.B.E. (Civil)

Edgar Leigh Collis M.R.C.P. I.P.
Emeritus professor of preventive medicine University
of Wales

George Carter Cossar M.C. L.R.C.P.E.
Founder of Todhill Farm Colony

Peter Sinclair Hunter M.B.
Municipal health officer Singapore

James Lochhead O.B.E. F.R.C.S.
Senior medical officer Gibraltar

James Perrins Major M.D.
Hon. secretary of the Indian branch of B.M.A.

O.B.E. (Military)

Major David Fettes F.R.C.S.E. R.A.M.C.

Major Frank Holmes M.B. R.A.M.C.

Captain Trevor Edward Palmer M.B. I.M.S.
Late M.O. British Legation guard Addis Ababa

Surgeon Captain James Bruce Ronaldson V.D.
M.D. R.N.V.R.

Wing Commander Alan Filmer Rook, M.R.C.P.
R.A.F.

Surgeon Commander John Wylie, M.B. R.N.

O.B.E. (Civil)

C. R. Cooke-Taylor M.R.C.S. D.P.M.
Parliamentary candidate for Dulwich

John Merrill Cruikshank M.D.
Chief medical officer Bahamas

Owen Wynne Griffith L.R.C.P. J.P.
Eleven times mayor of Penrhell

John Daniel Harner F.R.C.S.
Surgical specialist Northern Rhodesia

David Hynd M.B.
Of Broomfield Swaziland

Major G. M. Moffatt L.R.C.P. I.M.S.
Civil surgeon Lashio Burma

Mrs. Dorothy Mary Roberts M.B.
Of Bishopscourt Straits Settlements

Lieut. Colonel John Rodger M.C. M.B. I.M.S.
Chief medical officer in Baluchistan

George Waugh Scott M.D.
Of Sungai Siput Perak, F.M.S.

Lieut. Colonel I. H. S. Smith M.B. I.M.S.
Superintendent Central Jail Haripur N.W.F.

Imperial Service Order

Herbert Rendell M.B.
Formerly superintendent of tuberculosis sanatorium
Newfoundland

M.B.E. (Military)

Captain A. G. D. Whyte M.B. R.A.M.C.

M.B.E. (Civil)

Percy William Barnden M.R.C.S.
Medical officer Sudan United Mission

Miss Harriett Biffin M.S.
Of New South Wales.

Thomas Bertram Butcher M.R.C.S.
Hon. surgeon superintendent Cottage Hospital
Mussorie United Provinces

Major Francis Joseph D. Rose I.M.D.
Civil surgeon, Myaungmya Burma

Atul Chandra Dutta L.M.S.
Late medical officer Malacca, Straits Settlements

Birendra Nath Ghosh F.R.F.P.S.
Medical practitioner Bengal

Barjor Framji Khambatta M.B.
Port health officer Karachi

Kaiser-i-Hind Medal

Jehangir Ardeshr Anklesaria M.B.
Port health officer Rangoon

THE LANCET 100 YEARS AGO

May 20th 1837 p. 315

From the report of a paper on malignant diseases of the skin of the face read by Mr. CASPAR HAWKINS at a meeting of the Royal Medical and Chirurgical Society held on May 9th 1837—Dr. BRIGHT Resident

The term "malignant disease" however having been employed in a very vague and ill-defined manner the author commences by stating that he restricts the term malignant to such diseases as essentially possess a new structure capable of exerting a poisonous influence in one or more of these several degrees: 1st upon the neighbouring textures which are converted into a substance exactly similar or at least analogous to that of the new formation; 2ndly Upon the absorbent system so that the neighbouring gland become enlarged into a tumour like that originally deposited or 3rdly Upon the whole constitution, so that the poisonous secretions of the newly formed part gain access to the circulating fluids and tubercles of various forms but of the same or an analogous character become developed in some distant organs or textures which have no direct communication except through the blood with the parts in which the new structure was first formed

* * Our centenary extract this week contains two historic medical names Richard Bright who gave his name to Bright's disease was the first to connect albumin in the urine with dropsy no one previous having suspected the kidney to be the organ implicated

Caspar Hawkins an eminent man himself is often confused with his grandfather Sir Caspar Hawkins. The name Caspar had come down in the family from the sixteenth century. Sir Caspar was sergeant surgeon to King George II and King George III and his portrait by Hogarth is in the Royal College of Surgeons of England. His grandson whose name appears above was like Sir Caspar on the staff of St. George's Hospital. As a student he worked under Edward Home and Benjamin Brodie. He taught anatomy in association with Charles Bell in the Windmill street school and he was president of the College of Surgeons of England in 1842 and again in 1891 being one of the last presidents to hold office twice after an interval—E. L.

MEDICAL NEWS

University of Cambridge

The board of research studies has approved Prof C G Okell, F.R.C.P., for the degree of doctor of science

Royal College of Physicians of Edinburgh

A meeting of the college was held on May 4th with Dr W T Ritchie, the president, in the chair. Dr Douglas James Campbell (Grimsby) was introduced and took his seat as a fellow. Dr George Abeyesingha, Weera Wickramasuriya (Ceylon) was elected to the fellowship. The Freeland Barbour fellowship was awarded to Mr Walter Tebrich, B.Sc.

Honour for Sir Patrick Laidlaw

The faculty of medicine of the University of Toronto has awarded the Charles Mickle fellowship to Sir Patrick Laidlaw, F.R.S., of the National Institute for Medical Research, London, for his contributions to practical medical research.

Royal Society of Arts

On Wednesday, May 26th, at 8.15 p.m., Prof H D Kay, D.Sc., director of the National Institute for Research in Dairying of the University of Reading, will address this society on the biochemistry of milk secretion. Applications for tickets should be made to the secretary of the society, John-street, Adelphi, W.C.2

National Physical Laboratory

Prof W L Bragg, F.R.S., Langworthy professor of physics in the University of Manchester, has been appointed director of the National Physical Laboratory. He will take up his duties in the autumn.

Science and Peace

One of the commissions of this year's National Peace Congress, which meets in London from May 28th to 31st, is concerned with the contribution of science and medicine to peace. The chairman is Prof S Chapman, F.R.S., of the Imperial College of Science, and the introductory address will be given by Prof P M S Blackett. Particulars may be had from the National Peace Council, 39, Victoria street, London, S.W.1

International Rheumatism Congress

The annual international symposium organised by the Ligue Française contre le Rhumatisme will be held this year in Paris on Oct. 9th under the presidency of Prof Laignel Lavastine on radiotherapy in rheumatism. In the morning a clinical meeting will be held at Prof M Loeper's medical Clinic, Hôpital Saint-Antoine. At 3 p.m. the congress will meet at the Faculty of Medicine when Coste (Paris) will discuss radiotherapy, Piéry, Cluzat, and Milhaud (Lyons), emanotherapy, and Euzière and Castagne (Montpellier), the radio active action of thermal waters. Further information may be had from the offices of the Journée du Rhumatisme, 23, rue du Cherche Midi, Paris, VI.

Association of Registered Biophysical Assistants

At a meeting of the executive committee on April 15th it was agreed that this association, which was founded in 1932, should in future be known as the Society of Physiotherapists. The change of title is made desirable by the formation of the National Register of Medical Auxiliaries, in which the Roll of Biophysical Assistants is now incorporated. Membership of the Society of Physiotherapists will be limited to those termed physiotherapists in the National Register of Medical Auxiliary Services. The society is not an examining, qualifying, or registering body, its principal aim is to represent its members by making their work known to the medical profession and the public thereby promoting the expert administration of physical methods of treatment and the ultimate elimination of the unqualified from the field of physiotherapy. Applications for membership may be addressed to the hon. secretary at 159, Victoria street London, S.W.1

Lord Horder has been appointed a deputy lieutenant for Hampshire

Glasgow Royal Infirmary

As soon as space is available in the new premises in the Blind Asylum buildings, a fracture clinic is to be set up. Accommodation will be provided for both out patients and in patients with ten beds for men and ten for women.

International Leprosy Conference

The fourth International Leprosy Conference will be held at Cairo beginning on March 21st, 1938. This will be the first international conference to be arranged by the International Leprosy Association since its inauguration in 1931. Previous conferences were held at Berlin in 1897, at Bergen in 1909, and at Strasbourg in 1923. Further information may be had from the secretary, 131, Baker street, London, W.1

International Union against Tuberculosis

The Italian Fascist National Federation against Tuberculosis has placed at the disposal of the Union six scholarships each of the value of 2000 liras with board and lodging at the Carlo Forlanini Institute in Rome. The scholarships will be awarded to young physicians who are already familiar with tuberculosis problems and who wish to improve their knowledge of this branch of medicine. The kind of work undertaken at the institute will be arranged between the director of the institute and the candidate, and papers on the work must be submitted for publication in the first instance to the editor of the *Bulletin* of the International Union against Tuberculosis. The scholarships will be awarded at the next session of the executive committee which will meet in Lisbon in September. Applications should reach the secretariat of the Union, 66, Boulevard, St-Michel, Paris, by July 6th.

Research in Tropical Medicine

The Medical Research Council advised by their tropical medical research committee which was appointed after consultation with the Colonial Office (*THE LANCET*, 1936, I, 558) have decided to offer three junior fellowships to qualified medical men who wish to receive training for research work in tropical medicine. Preference will be given to candidates who have already had preliminary experience of methods of research in some branch of medical science. Subject to satisfactory reports, the fellowships will be tenable for three years. The first year will be spent at a school of tropical medicine, the second in doing research in the same or some other institution at home, and the third largely in work under direction at some centre in the tropics. The stipend will be at the rates of £300, £400 and £500 per annum in the successive years, with an additional allowance during service abroad and necessary expenses. In three years' time, at least one senior fellowship will be available for candidates who have held the junior fellowships mentioned above. This will be awarded for a further period of three years, carrying stipend at the rate of £600-£750 per annum with an additional allowance during service abroad and expenses. The time will be spent mainly in research work in the tropics. The council are also prepared to consider immediate applications for senior fellowships from candidates who have had adequate experience in research work, whether already specially trained in tropical medicine or not.

The council intend to establish in due course, as suitable investigators become available as the result of the fellowships scheme, permanent and pensionable appointments for research work in tropical medicine, including senior posts. Members of this research staff will work partly in the tropics and partly in institutions at home to which they will be attached. The exact terms of service are still undecided but they will be not less favourable than those which apply to other Government appointments at home or overseas for men of similar professional standing. Inquiries may be addressed to the secretary of the tropical Medical Research Committee, 38, Old Queen street, London, S.W.1, to whom applications should be sent not later than June 15th.

Vacancies

For further information refer to the advertisement columns

Altrincham General Hosp—Sen and Jun H S's at rate of £150 and £120 respectively
Aylesbury Isolation Hosp—Deputy Matron Also Night Charge Nurse £90 and £70 respectively
Barnsley, St Helen Municipal General Hosp—M O, £650
Bedford County Hosp—Second H S at rate of £150
Belfast Royal Maternity Hosp—Res H S at rate of £100
Birmingham and Midland Hosp for Women—H S, at rate of £100
Blackburn Royal Infirmary—Res H S, £175
Bradford Children's Hosp—H S, £100
Brighton Royal Sussex County Hosp—H P, £150
Cardiff King Edward VII Welsh National Memorial Association
 Three Area Asst Tuberc Physicians each £500 Res M O £350 Asst Res M O £200 Also Asst Res M O for Glan Ely Tuberc Hosp, £200
Chelsea Hosp for Women, Arthur street S W—Jun, H S at rate of £100
City of London Hosp for Diseases of the Heart &c Victoria Park, E—H P at rate of £100
Connaught Hosp Walthamstow, E—Sen Res M O at rate of £175 Also H P H S and Cas O each at rate of £110
Cotnam and Warwickshire Hosp—Hon Asst Surgeon Also Res H S Cas O and Res H S for Aural and Ophth Depts each £125
County Mental Hosp Upper Warlingham Surrey—Asst M O £350
Dartford, Kent City of London Mental Hosp—Jun Asst M O, £350
Deansbury and District General Infirmary—Sen H S £200 Also Second H S £150
Downpatrick, Down County Mental Hosp—Jun Asst M O, £350
East Ham Memorial Hosp, Shrewsbury road E—H S to Spec Depts and Cas O at rate of £120
Elizabeth Garrett Anderson Hosp Euston road N W—Temp Hon Asst Surgeon Also Temp Hon Jun, Obstet Surgeon
Evelina Hosp for Sick Children Southwark, S E—H P at rate of £120
Exeter Royal Devon and Exeter Hosp—H S to Ear Nose and Throat Dept at rate of £150
Farnborough Public Assistance Hosp—Res Asst M O £250
Gloucestershire Royal Infirmary &c—H P, at rate of £150
Gordon Hosp for Rectal Diseases Vauxhall Bridge road S W—Res H S at rate of £150
Gosnell Women's Welfare Centre 39 Spencer street E C—M O
Haslings Royal East Sussex Hosp—Jun H S at rate of £150
Hertford County Hosp—H S at rate of £180
Hillingly, East Sussex County Mental Hosp—Sen Asst M O £600
Hosp for Epilepsy and Paralysis 4 Maida Vale W—Hon Anesthetist
Hosp for Sick Children Great Ormond street W C—Res H P and Res H S each at rate of £100
Hosp of St John and St Elizabeth 60, Grove End road N W—Ophth. Surgeon
Hosp for Tropical Diseases 25, Gordon street W C—H P, at rate of £120
Hosp for Women, Soho square W C—Res M O at rate of £100
Huddersfield County Borough—Asst School M O £500
Hull Royal Infirmary—H S to Ophth and Ear Nose and Throat Depts Also Second Cas O, each at rate of £150
Ilford Borough—Res M O for Maternity Home £400
Infants Hosp Vincent square Westminster—Hon Clin Assts to Out patients Also H P at rate of £100
Isleworth West Middlesex and County Hosp—Cas M O at rate of £350
Kensington Royal Borough—Deputy M O H £900
Kettering and District General Hosp—Res M O and Second Res M O at rate of £160 and £140 respectively
King's College Strand W C—Two Demonstratorships in Dept of Anatomy each £100 per term
Liverpool Heart Hosp—Hon Asst Physician
London County Council—Coroner for County of London £1700 Also Part time M O at rate of £40
London Lock Hosp 283, Harrow road W—Res M O to Male Dept at rate of £175
London University—University Readership in Obstetrics and Gynaecology for British Postgraduate Med School £800
Manchester Ancoats Hosp—Hon Reg for Ear Nose and Throat Dept Res Surg O £200 Also Orthopaedic Reg £50
Manchester Park Hosp Darcyholme—Second Res M O at rate of £225
Manchester Royal Infirmary—Med Chief Asst £300
Manchester and Salford Hosp for Skin Diseases—Two Asst M O's £100
Manchester Withington Hosp—Res Asst M O at rate of £200
Middlesex County Council—Asst. M O £600 Also Asst. Dental O £500
Miller General Hosp Greenwich road S E—Two H P's Also H S each at rate of £100
Newcastle upon Tyne Royal Victoria Infirmary—Hon Asst Surgeon Hon Asst. to Throat and Ear Dept Also Jun Surg Reg £150
Newport Mon Royal Gwent Hosp—Two H S's each at rate of £175
Nottingham General Hosp—Two Res Cas O's Also H S for Ear Nose and Throat Dept each at rate of £150
Oxford Eye Hosp Walton-street—H S to Ophthalmic Dept. £150

Plymouth, Prince of Wales Hosp—Res Surg O, at rate of £225 Jun H S at rate of £120 Also Hon Physician Hon Physician with charge of Out patients and Hon. Ophth Surg
Plymouth Royal Eye Infirmary—Hon Phys
Princess Elizabeth of York Hosp for Children Shadwell E—H P H S and Cas O, each at rate of £125
Princess Louise Kensington Hosp for Children St Quinlan avenue W—H S at rate of £120-£150
Queen Mary's Hosp for the Fast End Stratford, E—Res M O, Two Cas and Out patients O's each at rate of £150 Also Two H S's, H P Obstet H S, and Res Anesthetist and H P, each at rate of £120
Reading Royal Berkshire Hosp—Cas O Also H S to Spec Depts each at rate of £150
Rochester St Bartholomew's Hosp—H P Also Cas O with charge of Orthopaedic Beds each at rate of £150
Rotherham Hosp—Cas H S £150
Royal Free Hosp Gray's Inn road W C—1st H P Sen. Res M O £150 Also Res Cas O, at rate of £150
Royal Naval Medical Service—M O's
Royal Waterloo Hosp for Children and Women Waterloo-road S E—H S, at rate of £100
Salford Royal Hosp—Psychiatrist £52
Salisbury General Infirmary—Res M O £250 Also H P at rate of £125
St Bartholomew's Hosp, E C—Asst. Physician and Asst. Director to Med Professorship Unit
Shrewsbury, Royal Salop Infirmary—Res H P at rate of £160
Southampton Royal South Hants and Southampton Hosp—Locum Tenens Radium Officer 12 guineas per week
Southend-on-Sea General Hosp—Surg Reg, £275 Also Cas O at rate of £100
Staffordshire County Council—Res Asst M O for Wordsley Public Assistance Institution at rate of £300
Stoke-on-Trent Burslem Haywood and Tunstall War Memorial Hosp—Res H S at rate of £175
Stoke-on-Trent, North Staffs Royal Infirmary—H S for Aural and Ophth Dept, at rate of £150
Stroud General Hosp—Res M O at rate of £160
Sunderland Royal Infirmary—Two H S's and H P each £120
Surrey County Council—Asst M O £200 Also Jun Asst M O for County Sanatorium at rate of £350
Taunton and Somerset Hosp—H P at rate of £100
Victoria Hosp for Children Tile street, S W—Physio therapist £50
Wear Hosp Grove road Balham S W—Jun Res M O, £150
West Ham County Borough—2nd Asst Res M O for Central Home Levetonstone, £350
West London Hosp Hammersmith road W—Jun Asst M O for V D Dept. £350 Also H P and Two H S's each at rate of £100
Wickford Runwell Hosp—Asst. Res Physician £350
Wilkesden General Hosp Harlesden road N W—Hon Clin. Asst to Out patient Dept
Wolverhampton New Cross Hosp—Res Asst M O £200
Woolwich and District War Memorial Hosp Shooters hill S E—Three Hon Anesthetists
Worksworth Victoria Hosp—Sen and Jun Resident, £150 and £120 respectively

Births, Marriages, and Deaths

BIRTHS

BADO—On May 3rd at Plymouth the wife of Major A J Bado R A M C of a son
COOPER—On May 3rd at Milford Lodge near Stafford the wife of Dr T V Cooper of a son
DAWES—On May 3rd at Wotton under Edge Gloucestershire the wife of Dr W A Dawes of a daughter
JAUCH—On May 4th at Grantham the wife of F Joseline Jauch FRCS Eng of a daughter
TENNENT—On May 4th at Sutherland avenue W the wife of Thos Tennent M D Glasg of a son
WARNER—On May 1st at Devonshire place W the wife of E C Warner FRCP Lond of a daughter

DEATHS

BADGEROW—On May 9th in London Sir George Washington Badgerow CMG CVO MD Toronto FRCS Edin
BENNETT—On May 5th at Brookmans Park Herts Lewis Bensted M R C S Eng late of Muswell hill aged 65
GOLDIE—On May 4th Walter Leigh Mackinnon Goldie OBE FRCS Fag of Leamington Spa
KERR—On May 7th at Dundee Charles Kerr OBE MB Edin
MAY—On May 3rd at Edgbaston Birmingham Bennett May CBE FRCS Fag late Emeritus Professor of Surgery at the Birmingham University aged 92
SANGER—On May 5th in London Frederick Sanger MD Camb of Tanworth in Arden near Birmingham
SCOTT MACGREGOR—On May 4th George Scott MacGregor MD Edin. of Glasgow
STURGES JONES—On May 10th at Herne hill S E 24 Wilfrid Edward Sturges Jones M R C S Eng late of Chichester and H M Vict Consul Interior Peru in his 73rd year
A B—A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

NOTES, COMMENTS AND ABSTRACTS

A COMMERCIAL ART CENTRE

A MEETING for the inauguration of a commercial art centre was held recently at the Royal Society of Arts and some of our readers may be interested in the project. The intention is to establish in London a centre where specimens of the work of practising commercial artists can be displayed. Those behind the scheme find that manufacturers, advertisers and their agents find a difficulty in choosing the right artist for the advancement of a publicity scheme. It is difficult both to obtain a sufficient range of a particular artist's work at short notice and to discover new talent. The artist who is not working to a particular commission experiences difficulty in keeping touch with the general market, and only a few artists possess so many specimens of their work that they are able to keep possible buyers adequately informed. The establishment of a centre where an up-to-date range of the work of available artists could be inspected would solve the difficulties. The proposed commercial art centre would be situated in London and supported by the Society of Industrial Artists and the Incorporated Society of Artists in Commerce. It is not intended that the centre should act as an agency for the sale of work. Its effect would be to place buyers in direct touch with artists or their agents. The scheme has been worked out in some detail both financially and otherwise and has received promises of support from responsible sources. Those interested in the movement should communicate with the secretary of the organising committee, Commercial Art Centre, 4 Bedford-square, London W.C.

A DOYEN OF MICROCHEMISTRY

THE celebration by Prof. Hans Molisch of his eightieth birthday has been made the occasion for the issue of a special commemorative number of the journal *Mikrochemie* in view of the valuable contributions which Prof. Molisch has made to microchemistry. The number contains 47 papers by 45 different authors, many of whom have been his pupils. The contributions cover a very wide range of topics and vary considerably in size, one of the longest being by Prof. H. Fischer on the constitution of chlorophyll, which covers some 30 odd pages. The subjects dealt with are by no means exclusively botanical and cover all branches of inorganic and organic analysis as applied to foodstuffs, drugs, pharmaceutical products and the detection of traces of carotene in blood.

THE MAXAID HEARING AID

TWO so-called pocket model hearing aids with valve-amplification have recently been produced by the Ico-Scott Company of 62 High Holborn, London W.C.1. In both the apparatus is incorporated in a small unusually flat case measuring 6½ by 5½ by 1½ in. A small self-sitting ear piece may be used or the more usual disc-shaped one held by a light spring band. The low-tension current is supplied by two dry cells with a normal life of 25 to 30 working hours or an accumulator may be substituted at an extra cost of 7s. 6d.; the high-tension current is provided by a small dry battery stated to give several months' service. Both forms of dry cell are of well-known makes easily obtainable. The high-tension one costing 3s. 9d. and the low-tension 3d. each, so that upkeep is inexpensive. A volume-control is provided and also a tone-control adjusted by means of a set screw inside the case. The latter is intended to be set to suit the wearer's individual hearing and then to be left undisturbed. It is a useful feature which enables the instrument to be adapted to cases with loss of either

high or low tones. Model 52 P.L. employs two stages of amplification and costs 12 guineas while model 53 P.L.C. costing 10 guineas, has three stages and in addition a crystal microphone. This latter model, which we have examined is very sensitive and at the same time free from background noise. The makers suggest that the instrument may be kept in a man's pocket during use, but this is hardly to be recommended. Although small it is rather too large for the ordinary pocket microphone is not then in the best position for receiving sounds and friction against the clothes sets up disturbing noises. Better results are obtained with the instrument on the table or on the knee. It is a very neat and efficient apparatus.

PROPAGANDA AGAINST VENEREAL DISEASE

A VALIANT attempt to dispel the fog of ignorance and misconception still surrounding the subject of venereal disease in the public mind has been made by Mr. Carl Warren¹ who urges that these diseases if jointly attacked by doctors, public health authorities and the public could be virtually prevented or cured. Without intelligent co-operation from the patient the medical profession is hopelessly handicapped, hence the importance of teaching the public the facts and fallacies concerning syphilis and gonorrhoea and the value of such a book as this. The Scandinavian countries have already achieved a large measure of success in reducing the incidence of venereal disease, and there seems no reason why America and this country should not follow suit provided public enlightenment kept pace with medical knowledge and organisation. The book is written simply and accurately. The author obviously has no very high opinion of the existing standard of sexual ethics in America. Although the statistics are drawn almost entirely from American sources the book could be read with profit by young persons and particularly by those concerned with education in any country.

A HOSPITAL DIARY

Messrs. Fredk. Aldridge, 31 Paternoster-row, L.C.4 issue annually a diary particularly directed to the needs of the hospital world. The issue for 1937 is edited by Mr. F. P. Carroll. The diary contains in addition informative articles on law and engineering which should prove particularly helpful to the efficient management of a hospital. Ample space is left for entries in the body of the diary and a thumb index facilitates reference. A comprehensive buyers' guide arranged alphabetically under the names of the articles is included in the diary. The price of the diary is 5s. 6d.

CONTRACEPTION: PRINCIPLES AND TECHNIQUE

PROBABLY nurses, health visitors and midwives receive more inquiries about contraceptive principles and methods than any other member of the community and a book² written essentially for their instruction deserves attention. Dr. Griffith writes well if somewhat dogmatically. He discusses the advantages both to the individual and the State of the proper spacing of families and emphasises the urgent need to check dysgenic breeding. He relates the various devices, both past and present, used for limiting families, including abortion, intra-uterine devices, coitus interruptus, and sexual abstinence, and draws the conclusion that the soundest method is scientific birth control. As a member of the medical sub-committee of the National Birth Control Association he can speak with some authority on matters of

¹ *Mikrochemie*, Festschrift zum 80. Geburtstag von Hofrat Prof. Dr. Hans Molisch, Vienna: Emil Heilm and Co. 1936. Pp. 434. 3s. 6d.

² On Your G and I, by Carl Warren, B.A., B.S., M.D., Foreword by M. J. E. P. M.D., New York: Emerson B. A. Inc. 1937. Pp. 160. 5s.
³ Voluntary Parenthood, by F. W. E. Griffith, M.B.E.S., L.R.C.P., London: Heinemann, 1937. Pp. 141. 3s.

contraception and he describes briefly those which have best stood the test of clinical and laboratory investigation. Sexual education and ethics, the meaning of marriage, and the importance of family stability are given considerable space, but the chapters on genetics, the biology of cell division, and the internal secretions are somewhat sketchy. A few unfortunate inaccuracies have crept in on p. 103, for example, the author speaks of the ovarian follicular hormone (or folliculin) when he obviously means the corpus luteum hormone (progesterin or progesterone). An index, a list of voluntary and municipal clinics giving birth control advice, the Ministry of Health's memoranda on birth control, and a short bibliography are appended.

THE "BREVIS" IONIZER

At the present time zinc ionisation is being largely used in the treatment of hay-fever and similar nasal affections. The Victoria Electric Plant Company, of Spenser street, Westminster, have produced a convenient instrument for supplying the necessary electric current. It consists of a polished wood case measuring about 18 by 7½ by 7 in., containing an "Ever Ready" dry battery delivering a current of 30 volts, together with an instrument-board on which is mounted a voltmeter actuated by a push switch for checking the output from the battery, and a milliammeter with a red line at the 3 milli-ampere mark. The rheostat to regulate the strength of current is controlled by two rotating knobs giving a fine and very even adjustment. There is also a space for storing the necessary leads and terminals. The price is 10 guineas, and a somewhat smaller model without a cover to the instrument panel is supplied at 8 guineas. It is a well-made and portable machine for the application of ionisation for any purpose.

CORRIGENDUM.—Insulin Shock Treatment of Schizophrenia. In the article by James, Freudenberg, and Cannon, published in our last issue, the word subcutaneous in the second line on p. 1102 under the cross heading Phases of the Treatment should read *intramuscular*.

Medical Diary

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole street W

WEDNESDAY May 19th

Surgery. Subsection of Proctology 5 P.M. annual general meeting. Sir Edmund Spillars. A Review of Disorders and Diseases of the Colon, Founded on the Examination of the Alimentary Canal in 3800 Cases.

THURSDAY

Dermatology 5 P.M. (Cases at 4 P.M.) annual general meeting. Dr S. M. Whitteridge (introduced by Dr H. W. Barber). 1. Benign Lymphogranuloma. Dr H. MacCormac. 2. Molluscum Scaberrimum. Dr A. D. K. Peters. 3. Granulosis Rubra Nasi. Dr A. D. K. Peters and Dr A. N. Macbeth. 4. Partial Resolution of Leucoplakia Vulvae under Oestrin Therapy. Dr F. Jacobsohn. 5. Case for Diagnosis of Tuberculous Leprosy. Dr R. T. Bratt. 6. Case for Diagnosis. Dr R. E. A. Price and Mr Pask (introduced by Dr W. O. Donovan). Infantile Prurigo (With film).

Neurology 8 P.M. annual general meeting. Prof. M. Kroll (Moscow). Remote Symptoms in Nervous Diseases.

FRIDAY

Radiology 7 P.M. annual general meeting.

ROYAL SOCIETY OF TROPICAL MEDICINE AND

HYGIENE Manson House 26, Portland place W

THURSDAY May 20th.—8.15 P.M. Dr Ellis H. Hudson. Belal, the Epidemic Syphilis of the Euphrates Arab.

ROYAL MEDICO PSYCHOLOGICAL ASSOCIATION

THURSDAY May 20th.—2.30 P.M. (County Rooms Hotel street Leicester). Dr Ross Ashby. The Incidence of Mental Disorders and Allied Conditions in a large Group of the General Population. Dr C. J. C. Earl and Dr McKail. The Present Requirements for the Diploma in Psychological Medicine (Mental Deficiency Committee).

FRIDAY.—2.30 P.M. (Leicestershire and Rutland Mental Hospital Narborough). Dr K. K. Drury and Mr C. L. J. Freer. Suicide of a Voluntary Patient. An Abortive Case of Negligence. Dr D. Prentice. Syphilis in Mental Hospital Practice. Dr I. J. Davies. Schizophrenia.

SOCIETY OF MEDICAL OFFICERS OF HEALTH, 1, Thorn

hough street W.C.

FRIDAY, May 21st.—5 P.M. Dr W. G. Savage and Dr

E. H. T. Nash. The Future of Obstetrical Practice.

TUBERCULOSIS ASSOCIATION

FRIDAY, May 21st.—5.15 P.M. (Manson House, 26 Portland

place), Dr A. Stanley Griffith. Bovine Tuberculosis

in Man. 8.30 P.M. Dr James Watt and Dr Burton

Wood. Radiological Classification of Pulmonary

Tuberculosis.

SOCIETY OF RADIO THERAPISTS OF GREAT BRITAIN

AND IRELAND

FRIDAY, May 21st.—5 P.M. (11 Chandos street, W.), Mr

G. Gordon Taylor. Dr J. H. D. Webster, Dr H.

Burrows, Dr R. T. Payne, Mr R. F. Phillips. Malignant

Tumours of the Testis.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

THURSDAY May 20th.—8.30 P.M. (11 Chandos street W.)

Dr Elsie Warren. The Psychology of Minor Affections.

Dr C. W. J. Brasher. The Present Position of Medical

Psychology.

NORTH LONDON MEDICAL AND CHIRURGICAL

SOCIETY

THURSDAY May 20th.—9.15 P.M. (Royal Northern Hospital

Holloway road N.), Dr S. Kinnier Wilson. Epilepsy

and other Fits.

SOUTH WEST LONDON MEDICAL SOCIETY

WEDNESDAY May 19th.—9 P.M. (Bolingbroke Hospital,

Wandsworth common), Dr Wilfrid Sheldon. Abdominal

Distension in Children.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

UNIVERSITY OF LONDON

TUESDAY, May 18th.—5.30 P.M. (University College Gower-

street W.C.), Mr E. S. Russell D.Sc. Ancient

Biological Conceptions.

THURSDAY and FRIDAY.—5.30 P.M. Prof. Charles Slinger.

Emergence of Modern Physiological Doctrines to the

end of the Eighteenth Century, with Special Reference

to the Growth of Views on the Circulation of the

Blood.

UNIVERSITY OF BIRMINGHAM

TUESDAY May 18th.—4 P.M. (Medical Lecture Theatre)

Prof. Arvid Wallgren. Erythema Nodosum.

THURSDAY.—4 P.M., Prof. Wallgren. Childhood Infection

and Adult Type of Pulmonary Tuberculosis (Angley

lectures).

ST MARY'S HOSPITAL, W

TUESDAY May 18th.—5 P.M. (Institute of Pathology and

Research), Mr W. R. Thompson, D.Sc. F.R.S.

The Biological Control of Insect and Plant Pests.

BRITISH POSTGRADUATE MEDICAL SCHOOL Duane

road W.

WEDNESDAY May 19th.—Noon, clinical and pathological

conference (medical). 2 P.M., Dr J. Gray. Peptic

Ulcer and Gastric Carcinoma. 3 P.M., clinical and

pathological conference (surgical).

THURSDAY.—2.15 P.M., Dr Duncan White. Radiological

Demonstration. 3.30 P.M., Mr A. K. Henry. Demon-

strations of the Cadaver of Surgical Exposures.

FRIDAY.—2 P.M. operative obstetrics. 2.30 P.M., Mr Russell

Howard. Diseases of the Breast. 3 P.M., clinical and

pathological conference (obstetrics and gynaecology).

Daily, 10 A.M. to 4 P.M. medical clinics surgical clinics and

operations, obstetrical and gynaecological clinics and

operations.

WEST LONDON HOSPITAL POST GRADUATE COLLEGE,

Hammersmith, W.

TUESDAY, May 18th.—10 A.M. medical wards. 11 A.M.

surgical wards. 2 P.M., operations medical, surgical

and throat clinics.

WEDNESDAY.—10 A.M. children's ward and clinic. 11 A.M.

medical wards. 2 P.M. gynaecological operations,

medical surgical and eye clinics.

THURSDAY.—10 A.M. neurological and gynaecological clinics.

Noon fracture clinic. 2 P.M. operations medical,

surgical genito-urinary and eye clinics.

FRIDAY.—10 A.M. medical wards skin clinic. Noon lecture

on treatment. 2 P.M. operations medical surgical,

and throat clinics.

SATURDAY.—10 A.M. children's and surgical clinics. 11 A.M.

medical wards.

FELLOWSHIP OF MEDICINE AND POST GRADUATE

MEDICAL ASSOCIATION, 1, Wimpole street W.

MONDAY May 17th to SATURDAY May 22nd.—St John

CLINIC and INSTITUTE OF PHYSICAL MEDICINE.

Randolph road S.W. Sat. and Sun., course in physical

medicine.—St John's Hospital, 6, Lisle street

W.C., afternoon course in dermatology.—Mansfield

Hospital, Denmark hill S.E. afternoon course in

psychological medicine.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street

W.C.

THURSDAY May 20th.—2 P.M., Dr B. E. Schlesinger.

Periodic Vomiting. Headache. Pyrexia. 3 P.M., Mr

H. C. Apperly. The Care of the Child's Teeth.

Out-patient clinic at 10 A.M. and ward visits at 2 P.M.

LONDON SCHOOL OF DERMATOLOGY, 5, Lisle street

W.C.

TUESDAY, May 18th.—5 P.M. Dr J. E. M. Wigley. Napkin

Area Eruptions.

WEDNESDAY.—5 P.M. Dr J. Yuende. Pathological

Demonstration.

FRIDAY.—3 P.M. Dr W. J. O'Donovan. Tuberculosis of

the Skin.

GLASGOW POST GRADUATE MEDICAL ASSOCIATION

WEDNESDAY May 19th.—4.15 P.M. (Royal Infirmary)

Mr Arthur Jacobs. Urological Cases.

ADDRESSES AND ORIGINAL ARTICLES

THE BIPP METHOD OF TREATMENT OF ACUTE OSTEITIS*

BY JAMES H SAINT JLD Durl. FRCS Eng
F.A.C.SCONSULTING SURGEON TO THE THOMAS KNIGHT MEMORIAL
HOSPITAL, BLYTH, AND SENIOR SURGICAL REGISTRAR AT THE
ROYAL VICTORIA HOSPITAL, NEWCASTLE-ON-TYNE

ALTHOUGH acute osteitis may be said to be relatively infrequent in comparison with the more common acute surgical conditions its seriousness must necessarily render this disease one of great importance. Wakeley (1932) quoted figures from hospitals in the British Isles to show that there was a gradual lowering of its incidence in the last decade as compared with that of the first decade of the century. However the latest figures from the Registrar General's office show that whereas in 1931 there were 403 deaths from this disease † in 1935 the number was 447. Other figures from the same source indicate that the death rate was a little higher in 1926-30 than it was during 1921-25 but that since 1930 there has been no significant change. Thus it seems that the last 15 years have not brought forth evidence to support the comforting belief in a continued though gradual disappearance of this disease.

Some idea of how serious acute osteitis is may be had from Table I which shows the fatality rates in recently published series of cases.

TABLE I
Fatality rates in Acute Osteitis

Author	Percentage of deaths.
Eric Lloyd (1928)	32.5
Pyrah and Pain (1932)	27.1
John Fraser (1934)	24.0
Ogilvie (1928)	19.0
Gwynne Williams (1932)	15.9
Alex Althoff (1928)	11.8
Holman (1934)	9

It is seen that in some instances one patient out of every three or four died a fact which cannot be regarded with complacency. Mortality alone however is not the only feature of acute osteitis that makes it a disease of serious import for amongst those who recover may be seen deformity and interference with function of greater or less degree and these patients often suffer from recurrent attacks either in the bone first affected or in others at intervals during a long life. Thus acute osteitis often leaves in its wake sequelae that may cause, if not actual chronic invalidism at least impairment of capacity for work and of enjoyment of life. Any method of treatment therefore that holds out hope of reducing its mortality and decreasing its morbidity deserves consideration and it is the belief that the BIPP (bismuth iodoform paraffin paste) method of treatment may accomplish these objects that is largely responsible for this contribution.

The term osteitis is used throughout as meaning the inflammation of any or all of the constituent parts of bone which are so intimately connected with

one another—namely the periosteum, osteum and medulla. In view of this nomenclature such terms as periostitis indicating inflammation of the periosteum and osteomyelitis (or myelitis) intended usually to infer inflammation of the marrow-containing medullary cavity become superfluous apart from possessing the disadvantage of tending to denote that they represent separate diseases.

The present article will consider only the typical form of acute osteitis found in young people where the blood stream is the channel of infection. No reference will be made to the more uncommon type due to the direct introduction of organisms into the bone as for example in a compound fracture.

Pathological and Clinical Aspects

Success in combating any acute infective disease depends upon two factors—first correct diagnosis of the condition in its earliest stages—i.e. before complications due to spread of the infection have developed and secondly the institution of a rational form of treatment based upon a proper conception of the pathology present. Acute osteitis is no exception to these general rules, and attention is drawn to certain of its pathological and clinical features which have an important bearing on these points.

PATHOGENESIS

Acute osteitis begins as a small, delimited focus of infection in the cancellous tissue of the metaphysis of one of the long bones, usually at the more actively growing end. The importance of realising this fact cannot be over-emphasised, for at this stage the focus can be completely removed this procedure constituting the rational treatment. From this focus the infection if not checked will spread to involve the periosteum, the surrounding soft tissues (giving rise to an acute cellulitis) and the medullary cavity. Thus it is seen that acute periostitis and acute osteomyelitis are not separate diseases but are only complications due to the spread of infection from the initial bony focus, the infection still being confined to the bone itself. Starr's hypothesis (1922) that the spread of infection commonly takes place towards the periphery resulting in early involvement of the periosteum and that infection of the medullary cavity occurs relatively late by way of the Haversian canals secondarily to involvement of the periosteum receives support in my own clinical experience for in my series of cases a subperiosteal abscess was often present while the medullary cavity was not yet involved.

A further feature of the pathology of acute osteitis is the relationship between the general and local infections. It is often stated that acute osteitis is a local manifestation of a systemic disease but this appears to be an incomplete representation of the true facts. It is accepted that the organisms reach the bone by way of the blood stream, this path of infection pre-supposing a septicaemia to be present before the bone becomes affected. Since this is so it must be admitted that the septicaemia must be a mild type since it gives rise to no symptom, the general symptoms which point to an infection of the blood stream only obtruding themselves upon the clinical picture after the development of the bony focus. Thus it seems reasonable to a sume that these symptoms are caused by a reinfection of the blood stream from this focus. It is suggested, therefore, that the sequence of events is as follows: (1) a mild

*Based on a Hunterian lecture delivered at the Royal College of Surgeons of England on Feb. 5th.
†The varieties of acute or description of disease included in this group by the Registrar-General are as follows: acute osteomyelitis, epiphyseal osteomyelitis or necrosis of bone, infective osteomyelitis, periostitis or necrosis of bone, septic or suppurative osteitis or osteomyelitis or epiphysitis and Brodie's abscess. If and where inquiry to be a description of one of the foregoing diseases.

form of septicæmia with slight or no symptoms (consequent upon some septic focus in the skin or mucous membrane), (2) a focus of infection developing in the metaphysis of one of the long bones (the condition then becoming one of acute osteitis), (3) severe blood stream infection (toxæmia or septicæmia in the early stages or pyæmia later) due to absorption of toxins or organisms from the bony focus. Hence to regard acute osteitis as "a local manifestation of a systemic disease" is to consider only the relationship between the bony focus of infection and the primary mild septicæmia and to omit to take into account the all important fact that the serious systemic infection seen in acute osteitis occurs *after* the development of the bony focus and *is consequent upon it*. This view of the pathological sequence of events is one that calls for removal of the bony focus at the earliest possible moment.

SYMPTOMS AND SIGNS

From what was said about success in combating an acute infective disease, it follows that the important clinical features to know about acute osteitis are those that will help to establish the diagnosis of this condition in its earliest stage. The clinical picture, only too easily diagnosed, of high temperature, delirium, and a red, hot, swollen limb, almost literally a bag of pus, indicative of the spread of infection to such an extent as to make it almost impossible to save life, should be regarded as a relic of the past when the early symptomatology and pathology were but little understood. It is true that the disease occurs in young subjects before the epiphyses have united, that the patient is usually of the hospital class, often undernourished, with evidence of some recent infection of skin or mucous membrane and with a history of a blow or fall, but with the exception of the first-mentioned all these features may be absent in a given case. It is therefore important to bear in mind that, as in other acute surgical conditions, the history may not be typical and that an atypical one must not be allowed to cast doubts upon the diagnosis. What, then, are the special features in the symptomatology which can be said to point unequivocally to the diagnosis of acute osteitis in its earliest stage? They may be considered under *general* and *local* and are as follows—

GENERAL

Inflammatory fever—Often starts with a rigor, especially in severe cases, with a temperature of 100°–105° F and of a continuous type.

Polymorphonuclear leucocytosis—This is always present except in cases where the virulence of the infection is so great as to overwhelm the resistance of the patient, it is important because it indicates the presence of a pyogenic infection.

LOCAL

Pain of sudden onset and intense, over the end of a long bone, it is worse at night and usually prevents the patient from sleeping for more than minutes at a time.

Tenderness—Where the pain is complained of, palpation will reveal a spot of exquisite tenderness.

This triad of *elevated temperature* with *pain* and *tenderness* over the end of a long bone found on clinical examination, associated with a *leucocytosis*, definitely establishes the diagnosis and should be impressed upon the minds of medical students and practitioners, so that no doubt will remain about the significance of these findings and so that any patient found suffering from them will be regarded as a surgical emergency.

Since the diagnosis appears simple, why is it that so many cases of acute osteitis are not seen by a

surgeon for several days after the onset of their illness? There is no doubt that the most prevalent cause of delay is the provisional diagnosis of acute rheumatic arthritis accompanied by the decision to await the result of giving salicylates. What are the reasons for this frequent error of diagnosis? They are to be found in the swelling (the so called "sympathetic effusion") and apparently painful movements of the adjacent joint, leading to inadequate examination. Insufficient attention is paid to other symptoms and signs which are present—namely, that the pain is not in the joint but only *near* it, that careful palpation will reveal an adjacent metaphysis to be exquisitely tender, and that a definite degree of passive movement of the joint is obtainable without pain such as would never be the case were the joint the seat of an acute rheumatic arthritis. Absent also will be the involvement of other joints and the peculiar sweating of the rheumatic patient. Two other conditions which may be mistaken for acute osteitis are acute infective arthritis and acute cellulitis, but these have the advantage of being such that a surgical opinion will be sought at once, so that no time will be lost. In the former, any attempt to obtain passive movement causes excruciating pain and such pain may be caused even by an attendant walking across the floor or by touching the bed, much less the affected extremity. Acute cellulitis near the ends of the long bones is so uncommon in the absence of underlying bone infection that it was made the subject of one of Rutherford Morison's many pertinent aphorisms, "Cellulitis in a young limb means osteitis." However, it should be remembered that cellulitis is a complication of osteitis and indicates that the infection has already spread through the periosteum into the surrounding soft tissues. There is one further observation that is of great use in the diagnosis of acute osteitis, and that is the absence of involvement of the lymph glands draining the area superficial to that where pain and tenderness are present, these are always the seat of a lymphadenitis in cases where the infection has begun in the soft tissues.

Actions of BIPP

Bismuth iodoform paraffin paste (Bipp) consists of bismuth subnitrate 1 part, and iodoform 2 parts, mixed with liquid paraffin in sufficient quantity to form a paste. The presence of the bismuth salt recalls the paste used by Emil Beck, but the addition of the iodoform results in a chemical action which gives Bipp its valuable properties. In the Pharmaceutical Codex the formula of Bipp is given as bismuth subnitrate 25 per cent, iodoform 50 per cent and liquid paraffin 25 per cent. One interesting feature of this formula lies in the fact that whereas iodoform is used ordinarily in strengths of 5–10 per cent, its incorporation into Bipp enables it to be used in a strength of no less than 50 per cent. The origin of Bipp dates back to the late war when, at the Northumberland War Hospital, Prof Rutherford Morison (1918) was experimenting, with the help of Mr W W Hunter, to find an ideal antiseptic—that is, one of such a strength as to inhibit the growth of organisms without doing tissue cell damage. At this time many of the men sent to this hospital had foul, discharging wounds necessitating frequent dressings, to the exhaustion of the nursing staff and to the agony of the patients themselves. After the institution of the Bipp method of treatment the scene changed dramatically, for these wounds ceased to be painful, dressings were only necessary at weekly or less frequent intervals, and the wards "were

full of cheerful men whose chief anxiety seemed to be to know when they could get up (Morrison 1922). This method of treatment was adopted widely for wounds and compound fractures both clean and infected, by the British Army authorities at home and abroad and was the means whereby thousands of limbs and lives were saved to say nothing of the relief from suffering which was achieved.

The chemical and bacteriological actions of Bipp were demonstrated by the work of Anderson Chambers and Goldsmith (1917) as a result of extensive experiments. They consider that the chief chemical reaction that takes place consists in the oxidation of the iodoform by oxygen derived from the air or from arterial blood and by the nitric acid formed by the hydrolysis of the bismuth salt. The result of this reaction is the continued liberation of small quantities of free iodine. They found that although organisms were still present in wounds treated by Bipp yet they were unable to proliferate freely and that the wounds healed as though they were surgically clean. It seems that the introduction of Bipp into a wound results in the liberation of nascent iodine thus forming a mild continuously acting antiseptic which acts as a deterrent to the growth of organisms but does no harm to the tissues. As illustrating this continuous chemical action of Bipp it is of interest that after the application of the paste to a wound iodine has been recovered daily in the urine for as long as three weeks.

At this juncture it might be well to draw attention to the fact that Bipp can act as a poison as disadvantage from which it was found to suffer in the early days of its use if large quantities were left in wounds. It is also dangerous to use it in the serous cavities on account of possible absorption of the iodoform. Except for occasional idiosyncrasy examples of which must be very rare and have never occurred in my extensive experience of Bipp there need be no fear of poisoning provided that the paste is used sparingly in the manner to be detailed later. Should poisoning occur it may be due to either the iodoform or the bismuth salt. Iodoform poisoning is usually seen within 24 hours of operation the symptoms being a high temperature—often 103 to 105 F—a rapid pulse, dilatation of the pupils a red tongue and sometimes the appearance of a bright scarlet rash. There may be no complaint from the patient. The pulse becomes more feeble and rapid and the patient may die delirious and of heart failure. Bismuth poisoning is a later manifestation the symptoms usually not appearing until four or five days after operation. The patient complains first of a sore mouth and on examination the breath is foul the gums are spongy and show a black line round the teeth due to the deposition of bismuth sulphide. In severe cases much salivation is present the black deposit may be seen on the tongue and cheeks as well as on the gums and ulceration is likely to occur the breath meanwhile becoming more and more foul; diarrhoea may ensue the temperature becomes raised a secondary anaemia develops and the patient a condition rapidly deteriorates. In either case the only hope lies in the immediate evacuation of the Bipp and while this may lead to relief in a case of bismuth poisoning patients with serious symptoms of iodoform poisoning often die in spite of this measure and any others that may be taken.

Method of Treatment

The principles which govern this method of treatment of acute osteitis may be outlined briefly as

consisting of (1) the complete removal of the infected bony focus (2) the disinfection of the resulting wound by Bipp in the manner to be described and (3) immobilisation of the affected part. It is considered that these measures will arrest the spread of infection if they have been carried out efficiently. With this object in view it is clearly important to realise that the disease begins as a small bony focus for this can be completely removed and that delay in diagnosis through leading to spread of the infection will render the operative treatment more prolonged and more extensive and may decrease materially the likelihood of complete removal of the infected tissue thereby leading to further complications perhaps with a fatal issue.

THE OPERATION

Rather than describe the technique of this method of treatment in general terms it may be better understood by describing it in a typical case as for example one in which the upper end of the tibia is the seat of acute osteitis when the operation would be conducted as follows—

General anaesthesia—Provided that this is well administered there need be no special preference given to one type over another.

Preparation—A tourniquet applied to the thigh should be considered essential for without it the patient may lose a considerable amount of blood and children, who form the majority, do not withstand hemorrhage well. The skin of the whole leg distal to the tourniquet should be cleansed with 1 in 20 carbolic or other antiseptic. A sandbag is placed so that the leg will rest upon it and the sterile towels arranged in position.

Incision—A free vertical incision is made down to the bone with its centre over the focus indicated previously by the most tender spot that is found on the antero-internal surface of the tibia. The periosteum will usually be seen to be oedematous indicating underlying mischief while in some cases an actual subperiosteal abscess will be encountered when the pus is evacuated and the abscess wall cleaned gently by mopping it. The incision in the periosteum should be long enough to give a satisfactory exposure of the underlying bony surface.

Removal of the bony focus—The focus is sought for in the suspected area by drilling which is stopped as soon as pus is seen to emerge from a drill hole. The bone is now opened up with a gouge and every visible trace of inflamed cancellous tissue removed the opening being enlarged only as far but no further than is necessary for this purpose. The medullary cavity must not be opened unless the infection has spread into it and such an opening is regarded as necessary for the efficient removal of purulent contents. It may be difficult to know when one has come to the margin of the diseased area but ordinarily this is not so for the yellowish white purulent focus contrasts greatly with the normal reddish cancellous tissue. The absence of pus on drilling—a rare occurrence—should not affect the decision to open up the bone for a purulent focus may be discovered only when this is done. In early cases no pus may be found at all but there will be a focus consisting of tissue that is softer in consistency and more hyperaemic than normal cancellous tissue. Occasionally pus may exude from a drill hole and yet on opening up the bone no more may be found what little there was having escaped through the hole; in such a case however a definite focus of soft and hyperaemic tissue will be found. From the foregoing description it will be seen that a gutter operation has been performed with the specific purpose of removing the focus of infection in the bone but it is emphasised that the amount of guttering done must only be commensurate with efficient removal of the infected tissue and that unnecessary opening up of healthy tissue is to be strongly deprecated. This type of operation has the added advantage that in the event of some of the infected tissue being left behind the opening in the bone is large enough to provide adequate drainage.

Disinfection of the wound—The whole of the wound cavity is thoroughly mopped out with methylated spirit and then dried. The spirit is not only an efficient cleansing agent but, by its dehydrating action, leaves behind a dry surface to which the Bipp can adhere. Some Bipp is put on a dry gauze and rubbed into every part of the bone cavity and wound surface and all excess is removed, there being left behind only a thin covering of the paste over the exposed tissues.

Closure of the wound—The bone cavity is now packed with a Bipped gauze and the wound closed with interrupted sutures of thick Bipped silk except for the gauze exit, which leaves a passage for discharge. The packing of the cavity is advantageous since the gauze acts as a preventive against the hæmorrhage which would otherwise take place on removal of the tourniquet, and if some infected tissue has been left behind the organisms would find an ideal pabulum in the blood which would fill the cavity in the absence of the gauze. It is found that sutures of thick silk tend to cut through the skin much less than those of silkworm.

Dressing—Sterile boric powder is sprinkled liberally over and around the wound and a dressing put on consisting of dry gauze and abundant wool. The limb is then immobilised by fixing it on a back splint with Gooch side splints or plaster of Paris may be used for this purpose if preferred. The tourniquet is removed and the limb elevated.

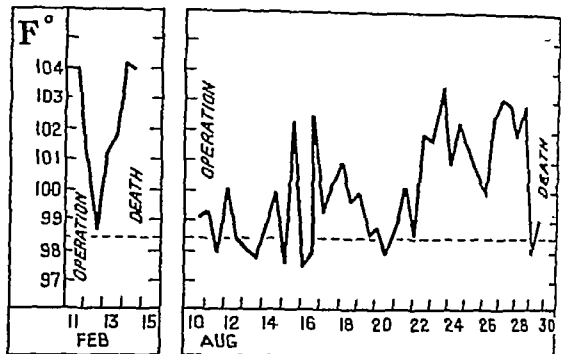
AFTER TREATMENT

Should hæmorrhage appear on the bandage—a rare occurrence—methylated spirit is poured over the stains and after this has been done the hæmorrhage will usually cease. Unless the patient should feel that the dressing is uncomfortable or there is much discharge—also rare—it is not touched for 10–14 days, when a general anæsthetic is given, the dressings and the sutures removed, the wound opened, and the gauze taken out. It will be seen that all the wound cavity is clean and lined by healthy granulation tissue.

The treatment of the cavity now comes under consideration. Should it be small no further treatment is necessary, and the wound, after being cleaned afresh with methylated spirit and a thin layer of Bipp applied to its surface, is closed again with interrupted sutures of thick Bipped silk. Following this there is usually little or no discharge and at the end of another 10–14 days the wound may be found to have healed entirely. Should there be any discharging area at this time, two or three weeks will usually suffice for its cessation.

When dealing with larger cavities it is advisable to resort to some means of attempting obliteration and the best method of doing this lies undoubtedly in the use of the pedicled muscle graft. In the situation under review—namely, the upper end of the tibia—such a graft is easily obtainable, it being possible to use either the tibialis anticus or the soleus, although the former is preferable as the operation is likely to be more easily accomplished. The cavity will have to be enlarged by removing the adjacent part of the crest of the tibia as the base of the graft must not lie over a ridge of bone, since the blood supply to the distal portion of the graft would probably be seriously jeopardised. The graft is cut with its base proximal to ensure the blood supply necessary for its survival, Bipped and laid in the cavity. The wound is then closed, as before, without drainage. While such a wound may heal by first intention, there may be a small amount of discharge which only calls for infrequent dressing and will probably cease in a week or two. The result of this method of dealing with the cavity is that a scar is formed consisting of the full thickness of the skin.

Mention of the use of free fat grafts should not be omitted when considering the obliteration of a bone cavity, for it is often successful. The grafts are usually easily obtainable from the thigh, gluteal region, or the abdominal wall, and this method is particularly valuable in situations where it is impossible to obtain a pedicled muscle graft such as the lower end of the tibia. On the whole, however, the muscle graft is to be preferred.



FIGS 1 and 2.—Temperature charts in two fatal cases.

Unless the gutter made in one of the long bones of the inferior extremity is exceptionally large, it is safe to allow weight-bearing some two months after the institution of treatment.

COMMENTS

There are several observations on this method of treatment which might well be made here. On the day following operation the temperature usually begins to descend and in some cases drops to normal in a dramatic manner, to remain afebrile. The absence of post operative pain is remarkable and gratifying, for the intense pain experienced before operation will be found to have disappeared when the effects of the anæsthetic have worn off. In my earlier cases even large cavities were packed and allowed to heal by granulation, but this method of procedure has the disadvantage of taking three or four months before healing is complete, and it results, when a subcutaneous bone such as the tibia is involved, in a thin scar adherent to bone, although it is only fair to state that it is by no means necessary to wait until such a cavity has healed completely before getting the patient up and allowing him to walk or attend school, for a weekly dressing is all the care that is required. However, it is obvious that this is a poor method of dealing with a bone cavity when compared with the quick and efficient closure of such a cavity as described above.

It will have been noticed that, in the description of the Bipp method of treatment, no mention was made of the formation of sequestra, the apparently common result and bugbear of other forms of treatment of acute osteitis. The truth is that apart from the flaky variety that are discharged naturally without any trouble to the patient, sequestra do not form and that secondary operations for their removal are therefore not necessary. It is interesting to consider the reasons for this remarkable absence of sequestrum formation. At operation it is usually impossible to tell what amount if any, of the dense bone is either already dead or likely to die, but there seems no doubt that by the guttering over the focus of infection much of the dense bone which has necrosed, and which would later separate as a

sequestrum is removed. Also the provision of such adequate drainage combats the risk of further necrosis due to tension which might occur as a result of the inability of the products of inflammation to escape sufficiently quickly if by any chance they were not completely removed at operation. Further more from what has been said about the bacteriological action of Bipp the absorption of the iodine seems to control the infection even when it has spread into the tissues around the excised area this control leading to diminution of inflammation and therefore of tension and so helping to avoid the formation of sequestra. These reasons appear to explain satisfactorily the absence of sequestration following the treatment of acute osteitis by the Bipp method.

Lastly it will have been realised that the technique of this method is relatively simple this in itself being a commendation for its employment.

TABLE II

Bones Affected in 21 Cases of Acute Osteitis

Femur (lower end)	7	}	11
Tibia (upper end)	1		
Humerus (upper end)	3	}	10
Fibula (lower end)	2		
Radius (lower end)	2		
Clavicle (inner end)	1		
Os pubis	1		
Os calcis	1	}	—
Fifth metatarsal	1		
Total	1		

Résumé of Personal Cases

The series reported here numbered 21 patients, all of whom were operated upon during the past six years at the Royal Victoria Infirmary Newcastle on Tyne and the Thomas Knight Memorial Hospital Blyth. This number though not large in itself has provided sufficient personal experience to substantiate certain claims that will be made for this method of treatment.

In 15 cases there was a definite history of injury and of 10 in which a bacteriological examination of

infected tissue was made a growth of *Staphylococcus aureus* was obtained in 18 no organism being grown from the remaining one. The ages varied between 3 and 17 11 of the patients being under 12 and the remaining 10 over that age. As regards sex and the bones affected this series agrees very much with others which have been reported. There were 14 males and 7 females a proportion of two to one in favour of the former. Table II shows the bones affected. From this table it will be seen that the femur was the bone accounting for a third of the cases and that the femur and tibia combined comprise just over a half of the total number. It is also of interest to recall that the lower ends of the femur

fibula and radius and the upper ends of the tibia and humerus are the more actively growing ends of these bones.

In general terms the aims of treatment of acute osteitis may be said to be first the preservation of life, and second the preservation of growth and function and the results given below indicate the degree to which they have been achieved by the Bipp method of treatment in the present series of cases.



FIG 4.—Late result in a case of acute osteitis of the right femur treated with Bipp. There was no deformity or shortening. Knee-joint shown in full flexion.

of fatal cases (1) fatality with discussion (2) complications which arose before discharge from hospital (3) length of stay in hospital.

Fatality with discussion of fatal cases.—There were 2 deaths in this series a fatality rate of 9.5 per cent a rate much lower than most of those shown in Table I. While it is realised that it is manifestly unfair to judge any method of treatment on fatality alone because of those patients who are so ill when first seen by the surgeon that their fate is not decided by operative treatment yet human nature such that a method which has been shown to be associated with a low mortality will always be regarded with more enthusiasm than one that has resulted in a larger percentage of deaths.

The first fatal case was that of a boy, aged 16, who was admitted to hospital with great pain in the much swollen region of the left shoulder. The patient had been delirious while at home and on admission he was obviously very ill, having a temperature of over 101 F, a rapid and weak pulse, sore on the lips and sunk in eyes. At operation a large subperiosteal abscess was found and nearly all the cancellous tissue of the upper end of the humerus was purged but the infection had not involved the medullary cavity of the bone. Between the time of his operation and his death four days afterwards he developed a left-sided parotitis and an effusion into the left knee joint. His temperature shown in Fig 1 came down to normal on the day following his operation but then rose again to over 104 F just before he died. A post mortem examination was not obtained.

Most surgeons with experience of acute osteitis have met cases which when first seen by them were obviously suffering from an overwhelming blood stream infection of the nature of a septicæmia or septicæmia. About such cases there appears to be general agreement that the condition is due to the virulence of the organism to the lack of resistance of the patient or to a combination of them and that no treatment either conservative or radical is likely to be of any avail the patient doom to die, already sealed. I believe this to have been such

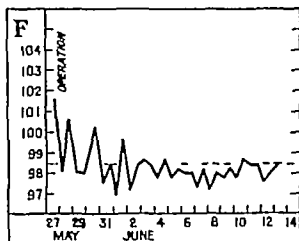


FIG 3.—Temperature chart of a typical case of acute osteitis treated with Bipp indicating length of stay in hospital.

infected tissue was made a growth of *Staphylococcus aureus* was obtained in 18 no organism being grown from the remaining one. The ages varied between 3 and 17 11 of the patients being under 12 and the remaining 10 over that age. As regards sex and the bones affected this series agrees very much with others which have been reported. There were 14 males and 7 females a proportion of two to one in favour of the former. Table II shows the bones affected. From this table it will be seen that the femur was the bone accounting for a third of the cases and that the femur and tibia combined comprise just over a half of the total number. It is also of interest to recall that the lower ends of the femur

a case. It is reasonable to assume, however, that some of these cases, if not a fair proportion of them, have passed through a stage of the disease when surgical treatment would have saved their lives. The boy mentioned above had been ill at home for almost two weeks before admission to hospital, and it is probable that recovery would have followed more

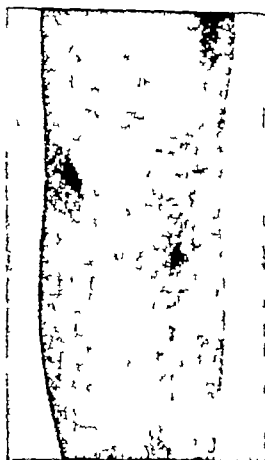


FIG 5—Late result in a case of acute osteitis of upper end of left tibia treated with Bipp. Absence of deformity or shortening. Full extension of knee joint. Note the broad adherent scar, the result of healing of the bone cavity by granulation, and compare with Fig. 10.

pain of sudden onset in the region of the end of one of the long bones, who has a point of exquisite tenderness in the same region, and who has an elevated temperature must be regarded as a potential case of acute osteitis and surgical opinion sought without delay.

The second case was that of a girl, aged 3, with acute osteitis of the lower end of the fibula. At operation only a small purulent focus was found and removed. After operation she appeared to be well for five days when her temperature rose to over 102° F (Fig. 2) and signs of a broncho pneumonia developed, but with no pain suggestive of pyæmic infarction of the lung. Her temperature fell again but then remained elevated for several days before she died nearly three weeks after operation. During this time the wound itself appeared to progress favourably, there being no clinical evidence suggestive of local spread of infection.

It certainly could not be said that this patient came under the category of having an overwhelming infection at the time of her admission to hospital, for there was then no apparent reason why recovery should not take place and consequently the final outcome was an unexpected disappointment. Unfortunately an autopsy was not allowed.

Complications occurred in 6 of the 19 surviving cases but in 4 of these they were of little consequence, consisting as they did of superficial pyæmic abscesses that healed in less than two weeks after being opened and drained. In 3 of the 4 cases only one abscess formed while in the remaining 1 there were two.

Of the 2 cases in which more severe complications occurred, the first was one of acute osteitis of the lower end of the femur. At operation there was found a large subperiosteal abscess and involvement of the bone to such an extent that a gutter about 6 in

long was required to reach the upper limit of the purulent focus. Unfortunately an accidental fracture occurred. Turbid fluid aspirated from the adjacent swollen knee joint at the time of operation yielded, like the pus from the bone, a growth of *S. aureus*. Since the patient complained of no further pain after operation and the swelling of the knee joint gradually subsided, no further treatment of this mild septic arthritis appeared to be indicated and none was undertaken. Further reference to this case will be made when considering restoration of function and sequestrum formation.

In the second case the tibia was the bone involved, there being a large subperiosteal abscess and spread of the infection into the medullary cavity. The operative treatment proved a failure as both the knee and ankle joint became involved and eventually the leg was amputated through the thigh as a life saving measure. After this the patient quickly recovered. There seems no doubt that the failure of the treatment was due to the leaving behind of infected tissue at the first operation.

Each of these patients had been ill for nearly two weeks before coming to operation and illustrate well how delay in diagnosis may militate against success of treatment by permitting of the spread of infection, thus not only undermining the general condition of the patient but also increasing the risk of operative accidents or errors in technique which ordinarily are readily avoided.

Length of stay in hospital.—Very little is mentioned in the literature of the length of time patients suffering from acute osteitis are kept in hospital. Ogilvie (1928), reporting a series of 51 cases from Guy's Hospital, found that the average length of stay in hospital was 2 months 12 days—i.e., approximately 72 days—omitting fatal cases and two others who were in for a longer period. These figures indicate how the disease may be of such a protracted nature as to impose severely upon the bed accommodation of any hospital, and sight should not be lost of the important fact that the longer the duration of the illness the worse is the functional result likely to be. It is therefore of interest to contrast these figures of Ogilvie's with those in the present series. Of the 19 surviving cases, 14 were in hospital under 28 days and 2 others under 35 days. The remaining 3 were in hospital for longer periods, 2 of them being the complicated cases mentioned above and the third one of acute osteitis of the lower end of the femur where the wound was packed and allowed to heal by granulation, the home conditions of this patient being such that it was considered advisable to keep him in hospital until the wound had healed completely. The length of stay in hospital of these cases was 59, 95, and 75 days respectively. Fig. 3 is a temperature chart of a typical case of acute osteitis treated by the Bipp method and indicates the short duration of their stay in hospital.

LATE RESULTS

These may be considered conveniently under the following three sections: (1) growth and function, (2) sequestrum formation, (3) recurrence of infection.

Growth and function.—There is an unfortunate lack of information on the late results of acute osteitis concerning growth and function in spite of the fact that, in endeavouring to assess the value of any particular method of treatment, this aspect of the disease must always form an important consideration. Most articles on the subject, while giving prominence to the method of treatment

employed by the author and the mortality associated with it, often omit altogether to mention the effects of the disease on those who were fortunate enough to recover. In no case of this series has the growth of the involved bone been other than normal there being neither shortening such as might be caused by extensive damage to the epiphyseal cartilage nor any irregularity of growth with resulting deformity such as might occur with its partial destruction. The function of the adjacent joint has only suffered in one case where an acute osteitis of the lower end of the femur was complicated by a septic arthritis of the adjacent knee joint there being now only about 10° of movement present.

Figs 4 and 5 are photographs of two typical cases taken to show the absence of shortening or deformity and the preservation of function of the adjacent joint.

Sequestrum formation.—In published reports the formation of sequestra following acute osteitis appears to be the rule rather than the exception although here again the information given is often vague. In the present series the remarkable absence of this feature which is the chief cause of persistent discharge and which often renders further operation necessary is therefore noteworthy. In 3 cases tiny flaky sequestra formed and were discharged naturally without any trouble to the patients. In only one case did a sequestrum form which was large enough to need a second operation for its removal; the femur was accidentally fractured and this was apparently responsible for interference with the blood-supply to a portion of the bone and for the consequent necrosis. In view of the absence of sequestration in other cases in this series where large gutters were made, there is reason to believe that had the fracture not occurred in this case also there would have been no sequestrum formation. Mention has already been made of the suggested reasons for this absence of sequestrum formation after using Bipp.

Recurrence of infection.—From some months to six years have passed since the cases in this series were operated upon and while this short post-operative history is long enough to provide accurate information about the effects of the disease on growth function and sequestrum formation it is not long enough to establish with anything like the same certainty the degree of liability to recurring infection which is one of the well recognised characteristics of acute osteitis. It may be either in the same or another bone though usually in a less acute form it being not uncommon for this to take place as long as 30 years or more after the initial attack. Consequently the absence of recurrence in this series of cases except in one instance is recorded to complete the investigation of the late results and not as an attempted proof that recurrence is less likely to take place following the Bipp method of treatment than after any other for many years must still elapse before accurate information can be obtained on this point.

The case in which recurrence took place was one where the bone originally involved was the left tibia. Three years later the boy was brought complaining of a gradually increasing swelling above the right knee with a dull boring pain in the same region. The pain and swelling had been noticed first about three months before the boy was brought for examination the condition thus being chronic in contrast to his former acute illness. During the three months the boy had remained in good general health. At operation a purulent focus about 1 cm. in diameter was found in the lower end of the femur requiring a limited operative procedure for its removal. The Bipp

method of treatment was again carried out and the patient had an uninterrupted convalescence. Bacteriological examination showed the presence in the focus of the *S. aureus* the same organism as that found on the first occasion.

(To be concluded)

DIAGNOSIS AND TREATMENT OF GASTRIC AND DUODENAL ULCER

By DUNCAN LEYS D.M. Oxon. M.R.C.P. Lond.

PHYSICIAN TO THE SELLY OAK HOSPITAL, BIRMINGHAM

RADIOLOGY has revolutionised diagnosis prognosis treatment even the classification of disease processes in many parts of the body and it is no longer permissible to leave any patient in whom symptoms of indigestion have persisted or recurred for some weeks or months without X-ray examination. None of the older methods available for the diagnosis of ulcers whether benign or malignant are entirely reliable. A few will certainly escape X-ray diagnosis also but if a chronic ulcer is present skilful radiology will disclose it on the first or second examination. An ulcer may give rise to no pain vomiting or alteration of appetite no tenderness may be found when the patient receives the ordinary clinical examination. The test meal may show a normal or low percentage of acid or free acid may be entirely absent. The benzidine test may show no trace of blood in either test meal or stool.

The apparent incidence of ulcer amongst a group of patients with persistent or intermittent dyspepsia may increase by 100 per cent. or more when the X-ray diagnosis is made by an experienced interested, and careful radiologist until it becomes a matter for surprise when clinical expectations are denied by the Röntgen rays. The degree of discomfort to the patient and his readiness to submit to repeated investigation bear also a simple relation to the skill of the radiologist.

The fluoroscopic examination is obviously of the first importance but it is a preliminary to the permanent record of the site of the ulcer and it is unnecessary for physicians who have neither time nor training enough to make their own X-ray diagnosis to be content with merely a verbal report. I made a clinical diagnosis of ulcer in 58 patients attending my clinic at Selly Oak Hospital in 1936. Dr B. T. Hooper radiologist to the hospital was unable to make a permanent record in only 3 of these cases. The reliability of skilled radiography does not of course excuse the omission of any of the older methods of diagnosis; the physician has in any case to make the preliminary diagnosis and must have in mind all the possibilities if serious cases are not to be missed nor the time of biochemist and radiologist wasted.

DIFFERENTIAL DIAGNOSIS OF CARCINOMA

Although it is possible to lay down a number of clinical criteria by which carcinoma of the stomach may be differentiated from simple ulcer it may be said that in individuals of appropriate age nothing except satisfactory Röntgen ray examination is sufficient to exclude it; there are rare cases in which only histology can do so. Nevertheless given adequate radiological help there should be no difficulty in promptly distinguishing the majority of cases of carcinoma of the stomach as soon as the patient seeks advice and mercifully it is a relatively uncommon

disease (It is, however, not encouraging to realise that in nearly six years of busy hospital practice, I have not seen a single patient with carcinoma of the stomach whose life has been usefully prolonged by surgery)

SILENT BLEEDING

Gastric ulcer is an important cause of hypochromic anæmia. It is true that most patients with ulcer have pain, and that the presence of an ulcer is therefore not likely to be overlooked, it is also true that if gastric analysis shows a complete achlorhydria in patients whose only symptoms are those of anæmia, iron deficiency is the likely cause. But it is safest to assume, until proof to the contrary is forthcoming, that (1) a patient with achlorhydria and long standing indigestion, whatever the age, and (2) a symptomless patient who has anæmia with free hydrochloric acid in the stomach, both have gastric or duodenal ulceration. It is in any case a serious mistake to treat any patient for anæmia without both blood count and gastric analysis, and even the absence of a positive benzidine reaction in the stools does not warrant the assumption, in either of the two eventualities cited, that no ulcer is present. I have seen cases misdiagnosed for months as Banti's disease or Wits's anæmia, and even the label of petit mal attached to a man who had had several attacks of fainting from periodic loss of blood from an ulcer which had not caused other symptoms severe enough for him to complain of them. Experience also, and not imagination, prompts the warning that "hæmorrhagic diathesis" and "gastrostaxis" are *probably* the result of a bleeding point in the base of a chronic ulcer. Diffuse oozing of blood from the gastric mucous membrane has been seen both at operation and post-mortem, thrombosis of the splenic vein can cause it. But a clinical assumption that gastric hæmorrhage has originated in this way is scarcely justifiable.

In general, local tenderness, as ordinarily tested, is an extremely unreliable sign of ulcer. The radiologist may elicit tenderness when the clinician does not, since the ward examination is made in bed, without knowledge as to the site of the ulcer, whereas the radiologist has his patient standing, with the stomach more accessible, and can direct his finger to the exact point where he sees the barium clinging to the ulcer base. Under such conditions the presence or absence of tenderness can be, especially on repeated examination, a good indication of the state of healing.

GASTRIC ANALYSIS

The fractional test-meal rarely if ever makes a diagnosis, but it can provide useful confirmatory evidence. In gastric ulcer the highest value for free acid in the fractional test-meal scarcely ever exceeds 0.2 per cent, and it may be completely absent from all specimens (2 cases in a series of 39 proved cases of gastric ulcer). It is frequently over 0.3 per cent when duodenal ulcer is present, and I have never seen complete achlorhydria with duodenal ulcer, although several specimens, and not necessarily the early ones, may show no acid.

The presence of blood is very significant, and it is never safe to assume, unless repeated examination later shows a complete absence of blood, that hæmorrhage, even in minute amount, is traumatic. Similarly, a positive benzidine reaction in the stools should always be taken as evidence of bleeding. In my experience it is unnecessary to get the subject of the test to abstain from meat, fish, or vegetables in order to avoid "false positives". I have on several occasions tested the point by asking a normal person

to take a milk diet, successively adding greens, fish, and meat to the diet, and have never found the test become positive.

HEALING

The rapidity with which the X ray shadow of an ulcer crater may disappear, under favourable conditions, is astonishing. Ulcers known to have been present at the same site for ten years will disappear in half that number of weeks. It has been questioned (see, for example, Rehfuess, 1927) whether the disappearance of X ray crater shadows can be accepted as conclusive evidence of healing, but even if one discounts the initial rapid diminution in size as due merely to the disappearance of local muscle spasm, there can still be followed the narrowing of the residual pit to a V shaped depression, and its ultimate disappearance, coincident with the disappearance of blood from the stools and tenderness on deep palpation. There seems no reason to doubt that the ulcer has healed, whether or no it remains so is not so obvious.

The accompanying tracings of ulcer craters taken from the radiograms of some of these cases are records of the actual time taken for chronic ulcers to disappear, they are drawn from films taken by the same radiologist, with the same technique, and give largest dimensions of the ulcer as it appeared in the films.

Neither age nor sex appeared, in this small series, to be factors of importance for healing except in so far as older patients tended to have larger and more chronic ulcers (there were, however, two patients whose first symptoms appeared after the age of 70). Of very great interest are those cases, fortunately rare, in which, while treatment is still being applied, an initial rapid healing is followed by some retrogression, as in Cases 9 and 23 figured below. In the latter case, recurrence of symptoms coincided with retrogressive changes in the radiogram and both with an attack of acute rheumatism. While more spectacular pictures of healing are obtained with gastric than with duodenal ulcers, on account of their greater size, and while the general tendency is certainly for more rapid progress to be made in the gastric cases, some remarkably quick cures have been seen in patients with duodenal ulcer. Rehfuess regards residual duodenal deformity as evidence of incomplete healing, but post-mortem and surgical experience show that the scar of a chronic healed ulcer can produce it, and clinical evidence seems to point to the same conclusion.

Absence of pain, of discomfort, of nausea and vomiting, of local tenderness, of blood from the stools—none of these things can be taken as evidence of complete healing. Six cases in this group had no blood in the stools when repeatedly examined, during the whole period of observation in hospital, and it is a common experience to find X ray evidence of an ulcer still present after the benzidine reaction has changed from positive to negative. From the observations of Faber (1935) it is certain that the gastric wall is permanently diseased in many cases before ulcer develops, and it is the obvious duty of clinicians to discover what are the factors which predispose to the breaking down of the mucous membrane and what to its healing. One set of factors may quite possibly be the reverse of the other.

THE SITE OF THE ULCER

Although the opinions expressed in this paper have been formed over a period of many years, the cases actually under review number only 58, and represent rather less than a single year's experience from

the wards under my care at Bely Oak a year during which X ray co-operation has been exceptionally good. Gastric ulcers were almost twice as common as duodenal, a finding which is contrary to the usually accepted incidence, stated by various authors to be $D U : G U = 3 \text{ or } 4 : 1$ (Osler and Macrae 4 : 1; Relhass 3 : 1 or 4 : 1; Shelton Horsley at least 4 : 1; Crohn several "duodenal ulcers to every gastric ulcer"). I wish to call attention to this discrepancy since although the number of cases reviewed is not large it is as large as the number of cases upon which most of these estimates were based, and the probability of finding fortuitously in my unselected

barely recognised. It is possible that some patients who attended my clinic or were admitted to my wards during the period under review were suffering from ulcer but have not appeared in this review owing to lack of evidence on which to base a diagnosis but the risk of their numbers being large enough to upset conclusions based on the belief that all cases of ulcer seen are included is small. By the nature of the symptoms it is improbable that chronic ulcers were missed and acute ulcers being all the more likely to be the site of haemorrhage would be brought to notice when the stools were examined.

This is not a mere academic point. Several facts suggest that the site of the ulcer may have some bearing on aetiology: duodenal ulcer occurs at an earlier age is more common among men than women and seems to be immune from carcinomatous change; duodenal ulcer occurs with equal frequency among poor and rich but gastric ulcer is twice as common among the poor.

TREATMENT

Certain facts must be kept in mind in attempting to assay any special line of treatment or in drawing conclusions as to aetiology from its apparent success:

(1) Healing undoubtedly takes place quite often in a gastric ulcer without the patient having been either put to bed or ordered any special treatment beyond advice as to diet. (This latter may of course be an all important point but it is not the obvious factor since healed cases may have been given very different diets; there is however one factor in common in almost all systems of gastric ulcer dieting—4 e milk.)

(2) Healing usually takes place more quickly in hospital than at home even if good conditions including rest in bed are employed at home.

(3) Pain from gastric ulcer disappears almost immediately if the patient goes to bed no matter what diet is taken (excluding however gross indiscretions).

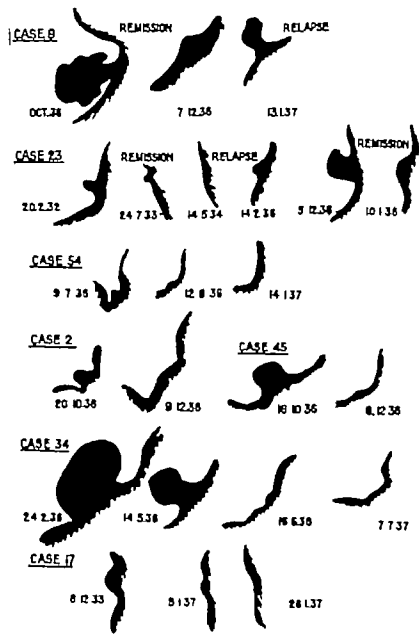
(4) Cases frequently occur in which healing does not take place or in which healing occurs but is followed by recurrence of ulceration notwithstanding prolonged rest in bed and milk diet.

(5) Alkalies and bismuth while appearing to relieve the pain of duodenal ulcer are powerless per se to effect a cure and have no effect either on the symptoms or the size of the lesion in gastric ulcer.

If these facts are remembered there is at present no evidence that any special line of treatment such as injections of histidine has any influence upon the course of the disease nor has there yet appeared any account of the conditions under which ulcer develops which can pretend to implicate any special set of circumstances.

Gastric ulcer is known to be common among all classes and a study of the type of work performed by the men in the present series yields no information of apparent significance: the work ranged from the purely sedentary to navvying. It is possible that heavy stress and anxiety all play a part but no close association has as yet been described as existing between e.g. ulcer and anxiety states.

The nature of the diet seems on the face of it a very promising line of inquiry. It is already known that mere trauma can continue for a life time without causing ulceration: what other factor can be involved? McCarrison is quoted by Relhass (1937) as having suggested the possibility of vitamin deficiency and there are many things to make diet deficiency plausible as a working hypothesis. Thus a long period of unemployment has preceded symptoms in several of my cases the onset of symptoms coinciding with a return to work. It might account for the class difference in mortality from gastric



Tracings from X ray films of healing gastric ulcers

series twice as many gastric as duodenal ulcers if the true incidence in the general population is $D U : G U = 4 : 1$ is one in many hundred thousands. The probability is still exceedingly small if the incidence is taken as $D U : G U = 1 : 1$.

For myself I think the explanation is that while careful radiography gives the site incidence in an unselected group of cases standard text book estimates are founded on surgical experience and perforation the common indication for interference is much more common in duodenal than in gastric ulcer ($D U : G U = 0 : 1$ according to Maingot's 1st graduate Surgery). The incidence found in my series of cases can hardly be due to the earlier recognition of gastric than duodenal ulcer by radiography since out of 48 clinically suggestive cases only 3 were left undetermined by X rays. Before surgical intervention was common gastric ulcer was reckoned to be frequent and the occurrence of duodenal ulcer

ulcer shown in the Registrar-General's Decennial Supplement. The one factor common to every type of treatment employed is a diet which includes a high proportion of milk, butter, and fish. Gastric ulcer is notoriously a disease of remissions and relapses such as are characteristic of several deficiency diseases.

It has at all events seemed to me wise to give all patients with ulcer of stomach or duodenum large doses of vitamin A because of the evidence of its great importance in the life and growth of epithelial tissues, and because we are ignorant as to the optimum intake. Patients have been rested and have taken a simple diet with a high proportion of first class protein, but no other treatment has been given beyond paraffin as required for constipation and if requested by the patient, and iron when there is anæmia. It is under these conditions that very rapid healing of ulcers has taken place. That unwise therapeutic limitation of diet may be a cause of delay in healing is very likely—it is already known to have given rise to iron deficiency anæmia, and one patient in this series, who, when he was admitted to hospital, was known to have had an ulcer for ten years, was proud of the fact that he had, according to his doctor's reputed instructions, lived during the whole of that time without fresh fruit, vegetables, or meat. I have seen another case in which a severe polyn neuritis leading to permanent disability developed after a very prolonged abstinence from meat and fish.

Specific factors apart, all patients with ulcer who have anything less than the full 100 per cent of hæmoglobin require a supply of iron in addition to their diet. Neglect of this factor in treatment may delay cure of anæmia for many weeks, although all hæmorrhage may have ceased. *Provided adequate precautions are observed*, there can be no question that the risks to a partially exsanguinated patient, even on those rare occasions on which it is possible to be certain that all bleeding has stopped, of death from infection in an open hospital ward, or from exhaustion or further loss of blood, are much greater than the possible ill effects of blood transfusion. Personal experience has made me very sceptical of the theory that transfusions of 20 ounces of blood are prone to provoke further hæmorrhage, or to harm the patient in any way. Pygott (1937) points out that in reported cases of death following blood transfusion when blood incompatibility has been excluded, there is reason to believe that the heart or vessels have always been diseased, and that no death has been reported as following the immense numbers of transfusions carried out for hæmorrhage.

SURGERY

My experience of surgical remedies for gastric and duodenal ulcer has been uniformly unfavourable. Particularly does one dread the patient with an ulcer, whether gastric or duodenal, for which any form of short circuit operation has been performed. Even symptomatic improvement is very difficult to obtain in such cases once symptoms have recurred, and one is strongly inclined to attribute initial improvement and subsequent freedom from symptoms, following gastro-enterostomy, to factors other than the surgical operation. Although greater caution is now exercised by surgeons in their selection of cases, and the fashion for wholesale short circuit and excision operations is mercifully on the wane, it is still common enough for a surgeon to consider himself entitled or even obliged to interfere when the diagnosis of chronic ulcer is made. Shelton Horsley, for example, states, "an operation on a gastric ulcer should not long be delayed."

In view of the obvious ease with which cure can almost always be obtained by perfectly safe means, operation for excision of ulcers is, in my opinion, entirely unjustifiable. Initial mortality is great, and the evidence for subsequent freedom from symptoms unsatisfactory, unless, as is sometimes the case, *real attention is paid for years to "medical" treatment* after operation. The removal of such a bulk of tissue, often including that part of the stomach concerned in the manufacture of the hæmaturic principle, is an added danger to the patient.

One is not even entirely convinced that the appreciable mortality, even in expert hands and with local "splanchnic anæsthesia," warrants operations for hour glass deformities and pyloric stenosis unless they are so gross as to exclude the possibility of safe remedies making a tolerable life possible. My impression is that every case in which X rays disclose such deformity should be given several months of "medical" treatment—i.e., rest, physiological diet, and possibly stomach lavage—before operation is considered. The whole of the deformity seen at the first examination is not necessarily permanent.

If one excludes (as recent controversy and personal experience surely entitles one to do) gastrectomy for hæmatemesis as being anything more than a last resort after repeated transfusions have failed to keep pace with bleeding, perforation remains the sole ordinary indication for surgical interference in gastric or duodenal ulceration, and, with the knowledge available, this complication should already be less frequent than it is.

SUMMARY

1 X ray examination of 58 consecutive cases, clinically diagnosed as peptic ulcer, demonstrated the ulcer crater in 55.

2 Gastric ulcer in this series was twice as common as duodenal (a reversal of the commonly accepted proportional incidence). Reasons are given for thinking that the older estimates of incidence were based on a surgical selection of cases.

3 Ulcers known to have been present for at least ten years have been shown to heal in a few weeks under certain conditions, the significance of which, as regards ætiology and treatment, is discussed.

REFERENCES

- Crohn B B (1927) *Affections of the Stomach*. Philadelphia.
 Faber K (1935) *Gastritis and its Consequences*. London.
 Horsley, S. (1933) *Surgery of the Stomach and Duodenum*. St. Louis.
 Malngot R (1936) *Postgraduate Surgery*. London.
 Osler W and McCrae T (1935) *Principles and Practice of Medicine*. 12th ed. London.
 Pygott F (1937) *Brit med J* 1 490.
 Rehfuess M E (1927) *Diagnosis and Treatment of Diseases of the Stomach*. Philadelphia.
 Stewart, R J (1923) *Brit med J* 2 955.
 Walton, A J (1937) *Nelson's Loose leaf Surgery*. New York.
 5 43

ST BARTHOLOMEW'S HOSPITAL, LONDON.—The governors of this hospital have under consideration a scheme for the erection on a site adjoining the hospital of a special ward block financially independent of the hospital but which would be able to call upon the special services of a large general hospital. This block would be open to persons with incomes of between £250 and £500 whom the hospital by its charter is at present debarred from helping. It is anticipated that the new block would be ultimately self supporting but a capital sum of about £120,000 would have to be found for the building and equipment. No appeal is at present being made to the public but those interested may obtain further information from Sir Gordon Campbell at the hospital.

TUBERCULOSIS IN WILD VOLES

By A Q WELLS D.M. Oxon.*

PATHOLOGIST TO THE BUREAU OF ANIMAL POPULATION IN THE UNIVERSITY OF OXFORD

(From the Sir William Dunn School of Pathology)

Griffith (1930) states that tuberculosis in warm blooded animals living wholly in the wild state is unknown. The object of this paper is briefly to report a widespread occurrence of tuberculosis in voles—*Microtus agrestis*. These animals are subject to a cycle of population increasing over a period of three to four years and then decreasing suddenly to a low figure in one or two months (Elton et al 1935 Findlay and Middleton 1934 Elton et al 1935 (in preparation)).

The possibility of this sudden decrease being due to epidemic disease has been the subject of my investigation of which this is a preliminary report.

For the past twelve months the field service of the Bureau of Animal Population in the University of Oxford has enabled me to examine voles both dead and alive from areas in Scotland Wales and England which are uncultivated and fenced off from domestic animals. The Bureau after much experiment has established a system of live trapping and transport of the voles to the laboratory where they have been kept in isolated cages.

On Jan. 20th 1937 a vole died which had been in the laboratory for a little over one month. The post mortem examination showed caseous areas throughout the subcutaneous tissues of the body involving the glands of the neck axilla inguinal region and back with ulceration of the skin round the right plume. Both lungs contained caseous areas with sharply defined edges, the mediastinal and mesenteric glands were much enlarged and caseous, the spleen was enlarged. The caseous material in the subcutaneous tissues contained a very large number of acid fast bacilli which have the morphology of *Mycobacterium tuberculosis*. The caseous areas in the lungs similarly contained a great number of acid fast bacilli but there was in section very little cellular reaction. Cultures made from the caseous material yielded no growth on nutrient agar but growth was visible after six weeks on Dorset's egg and I troff's medium. The nature of the growth and the morphology of the organism were similar to that of *Mycobacterium tuberculosis*.

An emulsion of caseous material from several voles similarly infected has been injected either subcutaneously or intraperitoneally into laboratory bred voles guinea pigs and rabbits. The disease has been reproduced in the voles with death of the animals; three guinea pigs have died with widespread disease of the organs, in which acid fast bacilli are present. Large local lesions have occurred in the rabbits without so far causing death. All the guinea pigs and rabbits have become reactors to tuberculin in about one month after inoculation.

Since February 1937 131 voles have been found with macroscopic tuberculous lesions in which acid fast bacilli have been demonstrated. These have been sent from seven different stations in the British Isles. Ninety two of these infected voles have arrived dead or have been killed on arrival. There is therefore no doubt that the infection has occurred in the field and not in the laboratory.

Although some facts about the bacterium in question are not yet known it seems highly probable that it is *Mycobacterium tuberculosis*. If it proves to be so several points of interest arise. The existence of

tuberculosis in wild animals may have some importance in the spread of the disease to man and domestic animals; the use in the laboratory of an animal which naturally contracts the disease may be preferable to the use of the animals used hitherto which are not known to have the disease in nature and the fact that a small animal easily maintained and bred in captivity here, is available for epidemiological study may throw some fresh light on tuberculo-

The organism is being typed by Dr A Stanley Griffith of the Field Laboratories University of Cambridge. I am indebted to him for his advice.

SUMMARY

The presence of disease presumed to be tuberculosis in wild voles is reported. The fact that the disease is widespread in the British Isles suggests that this is not a chance infection.

REFERENCES

- Elton C. Davis, D. H. & Clutton, D. H. (in preparation) and Findlay, J. M. (1935) *J. Anim. Ecol.* 4, 177.
Findlay, J. M. and Middleton, A. D. (1934) *Ibid.* 3, 190.
Griffith, A. Stanley (1930) *A System of Bacteriology* London vol. 4, p. 213.

AUTOSEROTHERAPY FOR DRUG ADDICTION

By MARGARET VIVIAN L.S.A.

Drug addicts have long been the *blues notes* of the medical profession and it is common knowledge that a long-standing case is an almost hopeless proposition when treated by the ordinary methods of gradual withdrawal or sudden deprivation. In the past I have tried to help many of these unhappy people. Many of them insisted on leaving the nursing home while still needing small doses of morphine and of those that endured to the end the majority sooner or later relapsed because they found themselves unable to cope with their daily work without their accustomed stimulant. These patients are usually the victims of circumstance and I am glad to be able now to record greater success in their treatment.

The method used (auto serotherapy) consists in the hypodermic injection of fluid obtained from blisters raised by applying irritant plaster to the patient's skin the amount injected being usually 5-10 ccm at a time. In the treatment of drug addiction this method was first described I believe by Modinos of Alexandria in 1929 but I did not see his paper until some years later. He records that he was treating some arthritic patients by auto serotherapy and that one of them who chanced to be a cocaine addict lost his craving after the first two injections—an event that led Modinos to try the same procedure in cases of morphine and heroin addiction. I have now used it in 6 cases and will give brief accounts of all of them.

THE CASES

CASE 1.—Dr A had been taking 3-4 gmn. of morphine a day for two years. He had tried the gradual withdrawal method and had laboratory got down to a bit under gr 2 a day but had failed to reduce the dose any further. He was very anxious to be cured and came to me for treatment in June 1934. After the first 11 treatment injections three days later he felt a further desire for the drug and he went to the central hospital straight although I had told him to stay another week. This was my first case and I was a bit worried that the patient at the remarkable result. He has never relapsed.

ulcer shown in the Registrar General's Decennial Supplement. The one factor common to every type of treatment employed is a diet which includes a high proportion of milk, butter, and fish. Gastric ulcer is notoriously a disease of remissions and relapses such as are characteristic of several deficiency diseases.

It has at all events seemed to me wise to give all patients with ulcer of stomach or duodenum large doses of vitamin A because of the evidence of its great importance in the life and growth of epithelial tissues, and because we are ignorant as to the optimum intake. Patients have been rested and have taken a simple diet with a high proportion of first class protein, but no other treatment has been given beyond paraffin as required for constipation and if requested by the patient, and iron when there is anæmia. It is under these conditions that very rapid healing of ulcers has taken place. That unwise therapeutic limitation of diet may be a cause of delay in healing is very likely—it is already known to have given rise to iron deficiency anæmia, and one patient in this series, who, when he was admitted to hospital, was known to have had an ulcer for ten years, was proud of the fact that he had, according to his doctor's reputed instructions, lived during the whole of that time without fresh fruit, vegetables, or meat. I have seen another case in which a severe polyneuritis leading to permanent disability developed after a very prolonged abstinence from meat and fish.

Specific factors apart, all patients with ulcer who have anything less than the full 100 per cent of hæmoglobin require a supply of iron in addition to their diet. Neglect of this factor in treatment may delay cure of anæmia for many weeks, although all hæmorrhage may have ceased. *Provided adequate precautions are observed*, there can be no question that the risks to a partially exsanguinated patient, even on those rare occasions on which it is possible to be certain that all bleeding has stopped, of death from infection in an open hospital ward, or from exhaustion or further loss of blood, are much greater than the possible ill effects of blood transfusion. Personal experience has made me very sceptical of the theory that transfusions of 20 ounces of blood are prone to provoke further hæmorrhage, or to harm the patient in any way. Pygott (1937) points out that in reported cases of death following blood transfusion when blood incompatibility has been excluded, there is reason to believe that the heart or vessels have always been diseased, and that no death has been reported as following the immense numbers of transfusions carried out for hæmorrhage.

SURGERY

My experience of surgical remedies for gastric and duodenal ulcer has been uniformly unfavourable. Particularly does one dread the patient with an ulcer, whether gastric or duodenal, for which any form of short circuit operation has been performed. Even symptomatic improvement is very difficult to obtain in such cases once symptoms have recurred, and one is strongly inclined to attribute initial improvement and subsequent freedom from symptoms, following gastro-enterostomy, to factors other than the surgical operation. Although greater caution is now exercised by surgeons in their selection of cases, and the fashion for wholesale short circuit and excision operations is mercifully on the wane, it is still common enough for a surgeon to consider himself entitled or even obliged to interfere when the diagnosis of chronic ulcer is made. Shelton Horsley, for example, states, "an operation on a gastric ulcer should not long be delayed."

In view of the obvious ease with which cure can almost always be obtained by perfectly safe means, operation for excision of ulcers is, in my opinion, entirely unjustifiable. Initial mortality is great, and the evidence for subsequent freedom from symptoms unsatisfactory, unless, as is sometimes the case, *real attention is paid for years to "medical" treatment after operation*. The removal of such a bulk of tissue, often including that part of the stomach concerned in the manufacture of the hæmaturic principle, is an added danger to the patient.

One is not even entirely convinced that the appreciable mortality, even in expert hands and with local "splanchnic anæsthesia," warrants operations for hour glass deformities and pyloric stenosis unless they are so gross as to exclude the possibility of safe remedies making a tolerable life possible. My impression is that every case in which X rays disclose such deformity should be given several months of "medical" treatment—i.e., rest, physiological diet, and possibly stomach lavage—before operation is considered. The whole of the deformity seen at the first examination is not necessarily permanent.

If one excludes (as recent controversy and personal experience surely entitles one to do) gastrectomy for hæmatemesis as being anything more than a last resort after repeated transfusions have failed to keep pace with bleeding, perforation remains the sole ordinary indication for surgical interference in gastric or duodenal ulceration, and, with the knowledge available, this complication should already be less frequent than it is.

SUMMARY

1 X ray examination of 58 consecutive cases, clinically diagnosed as peptic ulcer, demonstrated the ulcer crater in 55.

2 Gastric ulcer in this series was twice as common as duodenal (a reversal of the commonly accepted proportional incidence). Reasons are given for thinking that the older estimates of incidence were based on a surgical selection of cases.

3 Ulcers known to have been present for at least ten years have been shown to heal in a few weeks under certain conditions, the significance of which, as regards ætiology and treatment, is discussed.

REFERENCES

- Crohn B B (1927) *Affections of the Stomach*. Philadelphia.
 Faber, K (1935) *Gastritis and its Consequences*. London.
 Horsley S (1933) *Surgery of the Stomach and Duodenum*. St. Louis.
 Malngot R (1936) *Postgraduate Surgery*. London.
 Osler W and McCrae T (1935) *Principles and Practice of Medicine*. 12th ed. London.
 Pygott, F (1937) *Brit med J* 1 406.
 Rehfuess, M E (1927) *Diagnosis and Treatment of Diseases of the Stomach*. Philadelphia.
 Stewart R J (1923) *Brit med J* 2 935.
 Walton, A J (1937) *Nelson's Loose-leaf Surgery*. New York. 5-43.

ST BARTHOLOMEW'S HOSPITAL, LONDON.—The governors of this hospital have under consideration a scheme for the erection on a site adjoining the hospital of a special ward block financially independent of the hospital but which would be able to call upon the special services of a large general hospital. This block would be open to persons with incomes of between £250 and £500 whom the hospital by its charter is at present debarred from helping. It is anticipated that the new block would be ultimately self supporting but a capital sum of about £120,000 would have to be found for the building and equipment. No appeal is at present being made to the public but those interested may obtain further information from Sir Gordon Campbell at the hospital.

TUBERCULOSIS IN WILD VOLES

By A. Q. WELLS D.M. Oxon.*

PATHOLOGIST TO THE BUREAU OF ANIMAL POPULATION IN THE UNIVERSITY OF OXFORD

(From the Sir William Dunn School of Pathology)

Griffith (1930) states that tuberculosis in warm blooded animals living wholly in the wild state is unknown. The object of this paper is briefly to report a widespread occurrence of tuberculosis in voles—*Microtus agrestis*. These animals are subject to a cycle of population increasing over a period of three to four years and then decreasing suddenly to a low figure in one or two months (Elton et al. 1935 Findlay and Middleton 1934 Elton et al. MS (in preparation)).

The possibility of this sudden decrease being due to epidemic disease has been the subject of my investigation of which this is a preliminary report.

For the past twelve months the field service of the Bureau of Animal Population in the University of Oxford has enabled me to examine voles both dead and alive from areas in Scotland Wales and England which are uncultivated and fenced off from domestic animals. The Bureau after much experiment has established a system of live trapping and transport of the voles to the laboratory where they have been kept in isolated cages.

On Jan. 20th 1937 a vole died which had been in the laboratory for a little over one month. The post mortem examination showed caseous areas throughout the subcutaneous tissues of the body involving the glands of the neck axilla inguinal region and back with ulceration of the skin round the right pinna. Both lungs contained caseous areas with sharply defined edges; the mediastinal and mesenteric glands were much enlarged and caseous; the spleen was enlarged. The caseous material in the subcutaneous tissues contained a very large number of acid fast bacilli which have the morphology of *Mycobacterium tuberculosis*. The caseous areas in the lungs similarly contained a great number of acid fast bacilli but there was in section very little cellular reaction. Cultures made from the caseous material yielded no growth on nutrient agar but growth was visible after six weeks on Dorset's egg and Petroff's medium. The nature of the growth and the morphology of the organism were similar to that of *Mycobacterium tuberculosis*.

An emulsion of caseous material from several voles similarly infected has been injected either subcutaneously or intraperitoneally into laboratory bred voles guinea pigs and rabbits. The disease has been reproduced in the voles with death of the animals; three guinea pigs have died with widespread disease of the organs, in which acid fast bacilli are present. Large local lesions have occurred in the rabbit without so far causing death. All the guinea pigs and rabbits have become reactors to tuberculin in about one month after inoculation.

Since February 1937 134 voles have been found with macro-copic tuberculous lesion in which acid fast bacilli have been demonstrated. These have been sent from seven different stations in the British Isles. Ninety two of these infected voles have arrived dead or have been killed on arrival. There is therefore no doubt that the infection has occurred in the field and not in the laboratory.

Although some fact about the bacterium in question are not yet known it seems highly probable that it is *Mycobacterium tuberculosis*. If it proves to be so several points of interest arise. The existence of

tuberculosis in wild animals may have some importance in the spread of the disease to man and domestic animals. The use in the laboratory of an animal which naturally contracts the disease may be preferable to the use of the animals used hitherto which are not known to have the disease in nature and the fact that a small animal easily maintained and bred in captivity here is available for epidemiological study may throw some fresh light on tuberculo-

The organism is being typed by Dr A. Stanley Griffith of the Field Laboratories University of Cambridge. I am indebted to him for his advice.

SUMMARY

The presence of disease presumed to be tuberculosis in wild voles is reported. The fact that the disease is widespread in the British Isles suggests that this is not a chance infection.

REFERENCES

- Elton C. Davis, D. H. S. and Chitty, D. H. (in preparation) and Findlay, G. M. (1935) *Anim. Jour.* 4, 5.
Findlay, G. M. and Middleton, A. D. (1934) *Ibid.* 3, 150.
Griffith, A. Stanley (1930) *A System of Bacteriology* London vol. I, p. 213.

AUTOSEROTHERAPY FOR DRUG ADDICTION

By MARGARET VINTAS, L.S.A.

DRUG addicts have long been the *bête noire* of the medical profession and it is common knowledge that a long-standing case is an almost hopeless proposition when treated by the ordinary methods of gradual withdrawal or sudden deprivation. In the past I have tried to help many of these unhappy people. Many of them insisted on leaving the nursing home while still needing small doses of morphia and of those that endured to the end the majority sooner or later relapsed because they found themselves unable to cope with their daily work without their accustomed stimulant. These patients are usually the victims of circumstance and I am glad to be able now to record greater success in their treatment.

The method used (auto serotherapy) consists in the hypodermic injection of fluid obtained from blisters raised by applying irritant plaster to the patient's skin the amount injected being usually 5-10 ccm at a time. In the treatment of drug addiction this method was first described I believe by Medinos of Alexandria in 19-0 but I did not see his paper until some years later. He records that he was treating some arthritic patients by auto serotherapy and that one of them who chanced to be a cocaine addict lost his craving after the first two injections—an event that led Medinos to try the same procedure in cases of morphia and heroin addiction. I have now used it in 5 cases and will give brief accounts of all of them.

THE CASES

CASE 1.—Dr. A. had been taking 3-4 grains of morphia a day for two years. He had tried the gradual withdrawal method and had found it of no use to a little under 20 a day but had failed to reduce the dose any further. He was very anxious to be cured and I came to him for treatment in June 1934. After the second 10 ccm fluid injection three days later he felt no further need for the drug and he went home at the end of a fortnight although I had told him to stay in the work. This was my first case and I was at first doubtful of the result but the remarkable result. He has now very relapsed.

CASE 2—Dr B had been taking 4-5 grains of morphia daily for about five years. He had three blister fluid injections and needed no morphia after the second. The only difficulty in this case was insomnia, but at the end of three weeks he was sleeping naturally and felt no desire for morphia. I have lost sight of this case and do not know whether he has relapsed.

CASE 3—Dr C had been taking morphia on and off for the last twenty years, and had taken as much as 20 grains a day. Had been "cured" several times, but always relapsed because he felt ill and depressed after the gradual withdrawal. He needed no morphia after the second blister-fluid injection, but had so strong a desire for a hypodermic injection that I gave him Dionin gr $\frac{1}{2}$ t.d.s., filling up the bottle each time with the equivalent amount of water. When I told him that he had had no morphia for ten days, he ceased to ask for the injections, and left the home after being there three weeks. I have not heard from him since.

CASE 4—Dr D had been taking 3-4 grains of morphia a day for eight years, having started it after an operation for gall stones. Later he developed attacks of pseudo angina, but his supplies of Dangerous Drugs Act drugs were stopped by the Home Office, and he was obliged to seek help in order to be set free from his addiction. He was a difficult patient, threatening to commit suicide unless he could be assured of a supply of morphia for the rest of his life. He had four blister fluid injections, and insomnia was the only difficulty. Finally he left at the end of four weeks, sleeping fairly well with an occasional tablet of Dial at night. I saw him six months later, when he was in good health, had no desire for morphia, and slept well without any sedative. His anginal attacks had ceased. Recently a Home Office official, when writing about another patient, volunteered the information that Dr D is now in excellent health and free of any drug addiction. It is eighteen months since he left the home.

CASE 5—Dr E was a medical missionary who considered it very wrong to take drugs and had tried very hard to cure himself, but without success. He had been taking about 3 grains of morphia by the mouth daily for seven or eight years, and suffered from persistent constipation. After the second blister fluid injection he had no further desire for morphia. Dionin tided him over the first few nights, when he had difficulty in getting to sleep, and at the end of eighteen days he left the home, sleeping and eating normally. I heard from him three months later, and he assured me that he had no desire for drugs.

CASE 6—Dr F had been addicted to drugs for about fifteen years. His daily dose when he came to me was 20-30 grains of morphia, 10 grains of cocaine, and a bottle and a half of whisky. Like most addicts, he had fortified himself with enormous doses the day he arrived, and his first request was for a tumblerful of neat whisky. It seemed a hopeless kind of case, especially in view of the fact that he had been treated a year earlier at a home for nebrates, where it took three months to get him entirely free of drugs. On leaving the home he had remained free for six months although in practice and dispensing his own medicines. What was in his favour was that he seemed genuinely anxious to be cured. After the first 10 c cm of blister fluid Dr F slept and ate well and made no complaint on a daily dose of morphia gr 2 during the first three days. No whisky was given or desired after the first day, and no cocaine was given at any time.

Three days later a further 10 c cm of fluid was injected. For a few days he still wanted hypodermic injections, and asked for them at the usual times, but after the second blister fluid injection, diomn gr $\frac{1}{2}$ was substituted for the morphia without his knowledge. He made no complaint of needing morphia, but had very little sleep the first two nights, even after heavy doses of one or other of the barbiturates. The next night he still seemed excited and sleepless, and so I asked Dr H J A Summons to give him an intravenous injection of Sodium Evipan to ensure a good night's rest. He injected the solution very slowly, giving 20 c cm in all and while Dr F was in the early stage of anaesthesia we gave him strong and repeated suggestions that he should in future sleep without the aid of drugs or spirits. He had about six hours' sleep, and

the sodium evipan in decreasing doses was repeated for a further two nights. Thereafter Dr F slept 6½-8 hours every night without sedative. A third blister fluid injection was given on the tenth day, and from this time onwards the patient declared that he had no need or desire for drugs or spirits. At first he was easily tired and felt disinclined for any exertion, mental or physical, but this symptom disappeared rapidly, and when he left the home at the end of the third week he looked and felt a perfectly fit man.

In view of his past history with the long addiction and heavy dosage, the patient's relatives and I begged him not to return immediately to his work. But nothing that we could say would stop him. He declared that he felt perfectly safe and that under no circumstances would he be tempted to relapse. His wife, however, tells me that he is now taking the same heavy doses as before.

CASE 7—Mr G had become addicted about two years previously through being given hypodermic injections of morphia when suffering from renal colic. He had had various methods of treatment but had always relapsed. He professed a great desire to be set free from his addiction because of the increasing difficulty in obtaining supplies. The result of three blister fluid injections was similar to that observed in the other cases. He had no withdrawal symptoms, and had three nights excellent sleep after the morphia had been discontinued. He ate well and was in excellent health when disaster supervened. One Sunday morning he asked if he might go out alone, saying that he felt that a walk would do him good. Feeling reasonably sure that as a non-medical man he would find it impossible to obtain supplies of morphia in the town, I agreed. I learned later in the day that he had gone straight to a hotel where he had booked a room and summoned a doctor, to whom he simulated renal colic so successfully as to get an injection of a quarter of a grain of morphia. The procedure was repeated with another medical man, who was similarly deceived, but on hearing from the landlord that a doctor had already been called in, he became suspicious and rang up the first doctor, who in turn communicated with me. When Mr G returned late in the evening, tired but pleased with his cleverness, I taxed him with having obtained morphia by false pretences. At first he denied it, but when he saw that I knew what had happened, he took the next train home. He is, I fear, one of the cases that are quite hopeless, for he admitted that he was in no need of the drug when he took all this trouble to obtain it. It is impossible to change a man's character, and the relapse does not alter the fact that he was cured of all physical need for morphia within a fortnight.

CASE 8—Dr H had taken a daily dose of 2 grains of morphia for the past nine years. Recently he had substituted heroin for the morphia and was anxious to be free of his addiction because of an increasing fatigability, and also because he found it difficult to obtain supplies without arousing the suspicion of his chemist. He feared that sooner or later he might get into trouble with the authorities. I immediately replaced the heroin by morphia, as I have found that heroin is far more difficult to withdraw by the ordinary methods than is morphia. Dr H's recovery was uninterrupted and uneventful. After the second blister fluid injection he no longer needed morphia, and a few doses of diomn tided him over the customary period of insomnia. He left the home at the end of three weeks in perfect health and he was wise enough to take my advice and promised to keep away from medical practice until he had been away for six months' holiday. Since then a fortnight has elapsed and he has written saying that he is steadily improving in health and has no desire for any drug.

COMMENT

I hope that these brief notes may induce some of my colleagues to try autoserotherapy in similar cases. It does not perform miracles, but it obviates the usual distressing withdrawal symptoms, such as diarrhoea, restlessness, anorexia, and sneezing, and removes the physical need for the drug within two or three weeks. Naturally, if the patient elects to

return to his addiction after he has been freed from the physical need nothing will prevent him from doing so.

In obtaining the fluid I find two or even three or four small blisters—e.g. $1\frac{1}{2}$ in. square—preferable to one large one because they heal more readily. The fluid is withdrawn before the plaster is removed and reinjected immediately causing no pain or reaction of any kind.

REFERENCE

Modinos P (1929) *Dull Acad Méd Paris* 102 283.

EPILOIA WITH ASSOCIATED TUMOURS OF THE NAIL-BEDS

BY STANLEY G JAMES M.B. Sydney

M.R.C.P. Lond. D.P.M.

DEPUTY MEDICAL SUPERINTENDENT TO THE HAMPTON
STATE INSTITUTION, NEWYORK

EPILOIA is the name given by Sherlock (1911) to a clinical syndrome which consists of mental deficiency, epilepsy, and a condition of the skin known as adenoma sebaceum. Associated with this syndrome is the condition of nodular or tuberoso sclerosis of the brain. According to Tredgold (1929) and others these four conditions—mental deficiency, epilepsy, adenoma sebaceum, and tuberoso sclerosis—occur independently of each other and without anything else, but the presence of the first three together implies the existence of the fourth and the whole warrants wider recognition as a clinical and pathological entity.

CLINICAL PICTURE

Elliott (1936) has recently described a case of Pringle's disease (adenoma sebaceum) with associated tumours of the nail beds of the toes and from a subsequent discussion it appeared that this association, although exceedingly rare, is not unknown. The case which is here recorded is one of epiloia in which the adenoma sebaceum is associated with tumours of the nail beds of the toes as in Elliott's case and also of the fingers. The epiloia is also unusual in that there is mental deficiency with dangerous and violent propensities.

Epiloia is a relatively rare condition. Brushfield and Wyatt (1926) found it in 0.06 per cent. of admissions of mentally defective children to the Fountain Hospital. It is present from birth. A neuropathic heredity can usually be made out and blood relations with atypical moles and hyperkeratosis have been described. The mental deficiency is usually pronounced the lower grades imbecility and idioi being most commonly encountered. The epileptic fits begin at a very early age and are usually of the major variety. Most of the patients die before reaching adult age but this also applies to low grade defectives in general.

THE BRAIN LESION

Sclerosis of the brain associated with mental deficiency occurs in two forms: the diffuse which may be hypertrophic or atrophic and the nodular or tuberoso. The former may be accompanied by epileptic fits but does not enter into the syndrome of epiloia. Tuberoso sclerosis was first described by Bourneville (1880) and a number of cases have since been recorded. The following are some of the authors: Sailer (1898), Tredgold (1903), Dobson (1906), Vogt (1908), Fowler and Carnegie Dickson (1910), Bonilla (1910), Weygandt (1921), Knif (1913), Brushfield and Wyatt (1926), and Ritchey and

Earl (1932). These forms of sclerosis are disorders of development which are present at birth and there are various theories as to their cause. Some writers favour a vascular origin, some an inflammatory and others a neoplastic process, but the majority go no further than developmental anomaly. The sclerosis consists of a neuroglial proliferation which forms tumour masses. In the diffuse form the masses involve the grey and the white matter but in the tuberoso form they are

circumscribed tumours and are confined to the grey matter of the cerebral cortex, the basal ganglia and the retina. In the last situation the tumour known as a phakoma affords direct clinical evidence of the condition of the brain but unfortunately it is extremely rare. The brain tumours are found in the cortex and projecting into the lateral ventricles,

usually in large numbers. They are pale rounded bodies varying in size from a pin's head to a walnut. The consistency is firm even to stony hardness, and in the cortical situation the pin strips move readily from the tumour than from the normal tissue. Central umbilication may occur and cystic degeneration and calcification. Microscopically the masses are seen to be composed of glial fibres and large abnormal glial cells with degenerating glial and nerve cells and myelinated fibres intermingled. There may be thickening of the meninges in the neighbourhood of the tumours.

THE SKIN LESION

Adenoma sebaceum is a papular eruption of the skin. Sequeira (1927) refers to three types: in the first the tumours are pale (Balzer) in the second they are pink (Pringle 1890) and in the third the skin is warty (Hallopeau and Leredde). The eruption consists of neoplasms of the sebaceous glands, the pink colour of the second type being due to overgrowth of the capillary vessels and the third variety resulting from the addition of hyperkeratosis. The tumours are present at birth and at puberty there is either an increase or a diminution in their growth. They are closely set and vary in size from a pin's head to a pea. All three types may be present in the same case. The commonest site is the face, beginning in the naso labial folds and spreading to the nose and cheeks in a butterfly pattern. The pink variety is usually confined to this situation but the others may be found on the forehead, chin, neck, trunk, and limbs. Additional lesions of the skin may also occur and particular mention has been made of cutaneous horns, vascular naevi, vitiligo, white hair in the eyebrows, pigmented and hairy moles, and patches of fibromatous on the trunk, but there is little reference to papillomatosis of the nail beds.

Apart from these skin conditions, tuberoso sclerosis may be accompanied by tumours in the kidney, heart, liver, duodenum, spleen, thyroid, thymus, stomach, and uterus in that order of frequency. For the most part they are myomatous and are not recognizable during life.

CLINICAL REPORT

The patient was a single woman aged 33. She herself states that she suffered from epilepsy, the first seizure when she was a baby and continuing until the age of 2.



FIG. 1.—Photograph showing the white eyebrow on the right side and the adenoma sebaceum.

She left school while in Standard III. She stole her mother's jewellery, sold it, and sent the money in a plain envelope to a friend abroad. The police arrested her as being a person found without visible means of support and she was certified as mentally defective and sent to an institution at the age of 17. She remained continuously in institutions from that time until, at the age of 28, she was sent to Rampton State Institution in 1931. Her propensities as noted in the other institutions were that she was suspicious, unstable, difficult to manage, hostile, violent, influenced others to their detriment, and finally

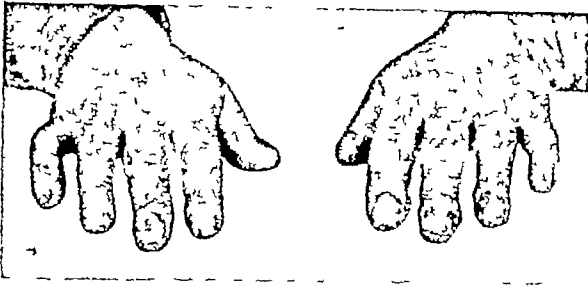


FIG 2—Filiform papillomata and chronic paronychia around the finger nails

made a violent assault on another patient. She says that she has had warts on her face, body, fingers, and toes as long as she can remember.

FIRST ADMISSION (1931)

Physical state—Height 5 ft 8½ in., weight 12 st 4 lb. Eyes grey, hair auburn. The right eyebrow and the inner half of the right upper eyelashes are white. Palate high and arched. There was generalised adenoma sebaceum with typical "butterfly" distribution on the face, and patches on the trunk and limbs. Numerous warts were present also and there was keratinisation of the finger and toe nails. Apart from some facial asymmetry the other systems were normal.

Mental state—Feeble minded. She was childish in manner, with limited reasoning power and defective mental capacity. Her mental age was below the average for her age. She stated that she had a bad temper which she did not try to control. She was said to be difficult to manage and to be violent and dangerous.

Subsequent progress—A few days after admission she was noted to be hostile in manner and attitude, and she stated that she would knock out the first person who interfered with her. She worked in the laundry in a careless fashion and was usually somewhat depressed. She resented her removal to Rampton and did not realise that she had done anything wrong in the previous institution. She gave no particular trouble except that on one occasion she tore up her bedclothes. Her explanation of this was that she was unsettled because the other girls had made remarks about her personal appearance. Fifteen months after her admission she was sent back to the certified institution, but failed to maintain her progress and was again admitted to Rampton three months later.

SECOND ADMISSION (1933)

Physical state—The previous findings were confirmed, the warts being more fully described as filiform papillomata at the roots of the nails of the fingers and toes. Her general health and condition were moderate.

Mental state—Unaltered.

Further progress—She developed an isolated personality, more solitary and silent than before, objecting quietly to ordinary routine. Six months later she became irritable, insolent and troublesome and needed to be secluded. She attacked the staff when reproved for making a noise. There has been nothing further of note beyond the occurrence of an undoubted epileptic fit, ten months ago.

PRESENT CONDITION

The hair—A considerable number of white hairs are present on the scalp, contrasting sharply with the general auburn hue. The hairs of the right eyebrow and the

inner half of the upper eyelashes on the right side are quite white and contrast with the remainder (Fig 1).

The filiform papillomata—These have given rise to some pain and discomfort and the larger ones have become abraded with secondary infection and haemorrhage. This condition has been treated from time to time by various means, including silver nitrate and tinct. benzoin co., with the result that the appearance of the papillomata is now modified. Those surrounding the finger nails have practically disappeared and there is a condition of chronic paronychia in their place (Fig 2). On the toes they have mostly lost their filiform shape and are more rounded (Fig 3). Patches of small fibromata are also present on the axillary folds and on the neck.

Adenoma sebaceum—The appearance on the face is typical of the Pringle type (Fig 1). The tumours are distributed on the cheeks on either side of the nose in butterfly fashion, some being situated on the nose as well, and a few scattered on the lips and chin. They are numerous and their size is variable, the largest being 7 mm across. The greater part of their bulk is projected above the surface of the skin, their surfaces are smooth and their colour either pink or red. In the other situations on the neck, trunk, and limbs, the appearance of the adenomata is quite different. They are much larger, up to 2 cm across, and somewhat resemble the shrivelled skins of white grapes. They hardly project above the surface and may be felt more easily than seen. Their colour does not differ much from that of the surrounding skin.

The other systems show no abnormality. The ocular fundi are normal and the urine contains no red blood corpuscles. The mental state is unchanged.

COMMENTARY

The outstanding point of interest in the case is the occurrence of fibromata of the nail beds. Fibromata in other parts are common in epiloia, as also are the patches of white hair. Emphasis may be laid on the "grape skin" type of adenomata occurring on the trunk and limbs. These tumours are liable to be mistaken for scars following burns or other injuries, but careful palpation reveals their true nature. I have seen a case of mental deficiency with epilepsy not recognised as epiloia, in which there were several "grape skin" adenomata in the skin over the scapulae, but no tumours on the face. The patient died in status epilepticus and a post mortem examination revealed the presence of tuberosc sclerosis of the brain.

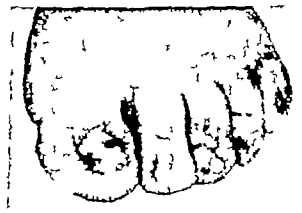


FIG 3—Papillomata on toes

It is to be noted that epiloia does occur with high grades as well as with low grades of mental deficiency. The defect of intelligence is not necessarily obvious and may be overlooked unless attention is paid to the point. Further, the epilepsy may be unknown to the patient or even deliberately concealed. In the case here reported, the history of fits up to the age of eight is rather vague and the diagnosis could not be made with certainty until the typical seizure was observed.

No treatment is known to be of avail in epiloia but the diagnosis of the condition is important in that the expectation of life is thereby considerably reduced.

REFERENCES

- Bondilla (1910) *Mechr. Psychiat. Neurol.* 27.
 Bourneville (1880) *Arch. Neurol. Paris* 1, 69, 391.
 Brushfield and Wyatt (1926) *Brit. J. Child Dis.* 23, 178, 251.
 Critchley, M. and Earl C. J. C. (1932) *Brain* 55, 311.

(Continued at foot of opposite page)

NUTRITIONAL RETROBULBAR NEURITIS FOLLOWED BY PARTIAL OPTIC ATROPHY

By D FITZGERALD MOORE, M.R.C.S. Eng.
SENIOR MEDICAL OFFICER, WEST AFRICAN MEDICAL
SERVICE, NIGERIA

In 1934 I published a report which included a summary of earlier findings on retrobulbar neuritis followed by partial atrophy due to avitaminosis. The essential symptoms were shown to be defective vision associated with active symptoms or a past history of a sore tongue and sore mouth a scaly itching scrotum and mental and other nervous manifestations.

CLINICAL PICTURE

The history of these patients is quite definite. Vision that has been perfectly normal becomes suddenly misty and there is much difficulty or inability in seeing clearly at a distance and in reading print. There is photophobia in bright light. The patient invariably has or has had one or more attacks of sore tongue white patches at the edges of the lips and dry scaly itchy scrotum. These skin lesions vary in intensity usually the tongue looks raw and the edges of the lips are only slightly cracked, the genital skin being smooth and dry. In worse cases these lesions are intense as shown in the figures. Additionally linear skin lesions may appear on the skin in front of the arms and at the back of the knees. In school-children these lesions are frequently passed unnoticed and their cause is not recognised particularly as they tend to improve in holiday time—that is on return to natural home conditions.

Examination of the eyes reveals no changes externally. In early cases there are few or no fundus changes but very definite changes appear later usually about two months after the first onset. After the first onset of symptoms there is a definite pallor of the disc more extreme on the temporal side. In severer and more advanced cases the disc appears typically that of a primary optic atrophy almost dead white with thin vessels and granular retina. Some very bad cases may also show a true optic neuritis with post neuritic changes. The effect on vision is profound and if untreated lasting even up to an inability to see hand movements. I have met boys at school who listen to their teachers because they can no longer see to read. All the evidence however goes to prove that total blindness does not occur though the patient may be rendered totally unemployable by virtue of his defect.

The optic nerve changes appear to be a direct result of an acute involvement at the onset of the syndrome and its severity is demonstrable in time by the resultant optic nerve changes. The optic nerve condition is therefore a partial post optic atrophy following retrobulbar neuritis.

(Continued from previous page)

The mouth and other skin lesions are not necessarily seen unless the patient is in an early or recurrent stage of the disease probably because he returns home to good food—on account of his illness. These skin lesions are however always a precursor to or concurrent with the first eye symptoms.

Stannus (1911) observed similar skin conditions on the Gold Coast and has always maintained that these were pellagrinous. Scott (1918) described an acute mostly fatal epidemic in Jamaica among the coolie workers in the cane plantations. Sore mouth and tongue defective vision and severe nervous involvement were the main features. Recovered cases showed "residual eye symptoms, high steppage gait &c." There is reason to believe this acute condition has definite points in common with the syndrome I describe though a fatal termination here is unknown. More recently Meagher (1936) appears to have described a similar acute epidemic in the Solomon Islands termed epidemic stomatitis. In 19-0 Wright described in Sierra Leone a disease which he later (1930) termed the A and B avitaminosis of Sierra Leone. The symptomatology is identical with this syndrome. St John (1936) finds an identical condition in the Barbados. He agrees in detail with the cause of defective vision being due to a retrobulbar neuritis followed by partial optic atrophy. Landor and Pallister (1934) reported cases of identical type in Malaya and believe the condition to be a world wide one. In reference to myself they state "he came to the conclusion the disease was due to lack of vitamin B₂ and we think this syndrome must be very near identical with ours." In a recent paper however he blames particular foods also such as *kamava* especially for the defective vision. They agree the ophthalmic defect is a retrobulbar neuritis followed by partial optic atrophy. Recently attention has been drawn to a similar condition in Jamaica by Clark (1937) by a pamphlet on malnutrition as a cause of retrobulbar neuritis in children; and by Dickenson (1937) optic atrophy in children; also in Gold Coast by Purcell (1937). Nicholls (1933) describes a syndrome in Ceylon which is identical in some respects but in which there seems also to be xerophthalmia. Tongue sprue in natives (Manson Bahr 1916) similar in definition appeared to have a dietetic cause.

ETIOLOGY

The disease itself is curable with Marmite alone or with yeast alone the skin lesions by antoclaved products and the eye lesions probably so. Landor and Pallister have proved that liver marmite and both antoclaved marmite and yeast are all successful. Their experiments definitely established that the skin and mouth conditions were dramatically amenable to vitamin B₂ therapy. The visual symptoms were shown to respond in the course of time to liver marmite and yeast on the other hand cod liver oil and fruit juice as controls had no effect on any lesion.

In 1934 cases were quoted in my report showing satisfactory results of treatment. This was given in a combined form—marmite a tea spoonful three times daily with cod liver oil half an ounce daily a standard iron tonic and native palm wine. It was shown that ophthalmological response was excellent in early cases and up to six months quite dramatic end results being obtained. Usually response began three weeks after treatment and improvement was maintained up to a vision of a small Snellen line in a fortnight in the most favourable cases even if they had gone to the point of nearness of vision on the other hand patients with longer history usually over a year responded less well according to the time since the onset of the disease. This was largely in keeping with clinical findings though there were striking exceptions in some apparently fatal cases. I believe however

- Dalman M. (1908) *Lancet*, 2, 1347.
Elliot J. J. (1910) *Proc. R. Soc. Med. (S. Dermat.)* 20, 1.
Fowler, and Cornegie Dick on W. L. (1919) *Quart. J. Med.* 4, 43.
Kauf J. (1913) *J. neurol. Psychiat.* 19, 91.
Pringle J. J. (1919) *Brit. J. Derm.* 2, 1.
Rabbin J. (1919) *J. neurol. Dis.* 36, 41.
Requena J. H. (1927) Diseases of the Skin, p. 4 London, p. 41.
Sherlock L. H. (1911) The Little Ninted London.
Trevelick J. A. (1923) *Arch. Neurol. Lond.* 2, 3.
Vogel (1919) Mental Deficiency, p. 10, London, p. 231.
Vogel H. (1919) *J. neurol. Dis.* 36, 41.
Weyrandt (1911) *Arch. Derm. Syph. Wien* 122, 466, 473.

that absolute cure is not possible, cases seeing only hand movements may improve to 6/6 vision, but there is difficulty in sustained reading of small print, the pupil also appearing to react slowly to light, and photophobia to a slight degree in bright light remains.

This combined treatment was not enough to establish directly the specific cause, and at this stage I believed that it lay between pellagra itself and vitamin B₁ deficiency, plus the probable addition of a toxic factor. During 1935 and 1936 I have carried out as far as local circumstances permitted selective therapy as suggested by Landor and Pallister. Response to marmite, yeast, or autoclaved dried yeast agree fully with their findings. Over 200 selected patients were treated for a period up to 10 months with yeast or marmite alone—the majority with marmite owing to its more stable properties. All skin conditions cleared up rapidly, and the visual response was entirely in keeping with results formerly obtained. Unfortunately I was only able, owing to local difficulties, to use autoclaved dried yeast in 8 cases, which I specially selected for their skin lesions, and treated for a very short time, results here were dramatic. Thus it has not been possible yet for me to prove therapeutically that ophthalmological response is due to vitamin B treatment exclusively, but other general evidence is so strong that I believe this certainly to be only awaiting confirmation in this respect.

To demonstrate the ophthalmological response to marmite I quote a fairly severe and typical case from my records.

A young negro, aged about 19, was seen in July, 1935. Vision was then 4/60. 4/60, he was unable to read. Discs showed well marked atrophic changes. He had a history of one year of sore tongue and mouth, an itching, scaly scrotum, and defective vision. When seen he still had active skin lesions, he had had to leave school because of his defective vision, and latterly had become quite unemployable in any capacity owing to this increasing defect. He was given marmite $\frac{1}{2}$ oz daily for a period of nearly 10 months. His vision had improved in six months to 6/18. 6/12 part, and remained so till I went on leave in November, 1936. The skin condition had cleared up entirely within a fortnight. The whole outlook of this boy is now changed, he is employable, bright, and active mentally, whereas when first seen he was dull and morose.



FIG 1—Photographs showing the condition of the face and of the skin of scrotum and buttocks

The second case illustrates the dramatic effect of marmite on the skin lesions.

A Mende boy from Sierra Leone was brought off an Italian ship by one of the officers who had noted his peculiar gait and appearance. It was possible to keep him only ten days as the ship was leaving port. He was treated by my colleague G. E. Dodds whose notes are as follows: Patient a Mende, aged 30, normal stature, striking facial appearance. Skin dull and rough with symmetrical patches of epithelium round eyes and angles of mouth (Fig 1). Tongue smooth, thickened, pale, slightly denuded of epithelium. Scrotum dry, rugose, and desquamating. Mentally he is slow but able to give his history. Skin condition was present three years. Hands and feet "humbugging" him for some months. Defective vision three years, getting worse, 4/60. 5/60. Illiterate. Severe optic neuritis and post atrophic changes in discs. Knee jerks absent, very ataxic. Kahn test negative. Given marmite $\frac{1}{2}$ oz daily.

Figs 1 and 2 show the remarkable effect in ten days on the skin lesions.

The syndrome is also prevented by adequate proteins of higher biological value. This is demonstrable in prisons in Southern Nigeria, since a carefully controlled and adequately balanced dietary is insisted upon and this syndrome is relatively unknown. On the other hand in institutions where food may not be balanced, particularly in essential proteins, a rate of 10 per cent and over has been observed, quite frequently.

Perhaps this point is best illustrated at a certain school specially visited by me on account of many

cases of defective vision, a number of girls having had to leave school. The school was in an isolated area and consisted of 80 pupils about half of whom were boys. All the girls showed well marked evidence of this syndrome but not one of the boys, whose bright shiny faces showed their good health. All food was brought by canoe twice weekly and distributed equally to both sexes. It was seriously deficient in proteins. Further inquiry showed that the boys augmented their diet daily by the simple expedient of catching and roasting the land crabs that existed in countless numbers in the vicinity. This was not permissible to the girls, who were kept in strict seclusion.

Xerophthalmia, the classical accepted clinical result of vitamin A deficiency,



FIG 2—The same patient after ten days treatment

has not been observed once in all the cases I have seen now amounting to some thousands. This is not surprising since palm oil shown by Prof. J. C. Drummond to be rich in vitamin A is a basic food of these people.

INCIDENCE

There are thousands of these cases some mild many severe. I have seen patients with histories dating back many years who are permanently defective in vision. Some of these patients are now quite old and their history traceable to their old school days the passage of time showing they have got neither better nor worse. I have seen many others whose vision has made them quite unemployable. Some of these are young adolescents and literates and their condition is a tragedy. The onset of defective vision is greater on the literate classes and has thus been specially noticeable in schools. Even so all classes are affected including pregnant women and even very young children.

RELATION TO DIET

The dietary of the Southern Nigerian peoples consists of palm oil *kassava* yams rice green leaves of various kinds local or imported dried fish salt pepper and maize and various fruits in season. Eggs though plentiful are not eaten. There are practically no cattle, and milk is not available in the South owing to the prevalence of tsetse fly. Meat is expensive and a rare luxury to the poor. Tinned milk is popular when it can be afforded. The sea coasts abound in fish but all such indigenous trade is controlled by Africans. There seems little doubt protein foodstuffs afford the missing protective link in this country and their gradual introduction by educational propaganda offers the solution to the prevention of this syndrome. It would be useless to discourage suspect basic foods such as manioc which have been in use for so many generations.

In Barbados St John reports that rice corn flower sweet potatoes locally made biscuit salt pork dried or with butter for flavouring are usually eaten. Eggs and green vegetables they sell rather than eat. *Kassava* they also eat though not as much as formerly. In Scott's polyneuritis cases the diet was almost entirely sugar cane.

TOXIC FACTORS

Clark who also spent 18 months in Nigeria and saw many of these cases who believes that cyanogen bearing foodstuffs such as sugar cane manioc (*kassava*) guinea corn rice millet and maize are by virtue of that content responsible for pellagra in the absence of adequate protective proteins. He believes the essential sulphur of the proteins is eliminated by the cyanogens to form cyanates and that sulphur therefore plays an important part in pellagra. There is much clinically to support the presence of a toxic element plus a deficiency as shown by co relationship to other diseases. There are wide variations in both from true pellagra itself. It is not without interest that Clark informs me from Egypt that he sees many of these pellagrinous cases identical in nature to this syndrome side by side with classical true pellagrins.

I have to thank Sir Walter Johnson late director of medical services Nigeria and Dr. Selwyn Clark deputy director health services for their interest and encouragement. I am also indebted to Dr. A. Clark who showed such keen interest in this work during his visit to Nigeria to Mr. T. Arthur for the preparation of autoclaved bread

yeast and to Mr. G. Duckworth and Mr. P. Phillips for the photographs.

REFERENCES

- Clark A. (1935) *Trans. P. Soc. trop. Med. Hyg.* 26 201
 — (1930) Certain Aspects of Poisoning by 1 vol Plants in Nigeria, 1931-30 (privately printed)
 Clark L. M. (1935-39) *Trans. Ind. med. Ass. (Jamaica branch)* 1 120
 Dickenson W. N. (1935-39) *Ibid.*
 Lander J. V. and Pallister R. A. (1935) *Trans. P. Soc. trop. Med. Hyg.* 29 121
 Manson Behr P. H. (1918) A report on Researches on Sprue in Ceylon 1912-14, pp. 91-94 46-1 *Ind. J. Med.* 1 115-17
 Meagher J. L. (1930) *Trans. P. Soc. trop. Med. Hyg.* 20 91
 Moore, D. E. (1930a) School-children. Partial Loss of Central Acuity of Vision for Reading and Distance. A Relation with Food Deficiency. Report to Director Medical and Sanitary Services Nigeria No. 111
 — (1930b) Partial Loss of Central Acuity for Reading and Distance in School-children and its Possible A Relation with Food Deficiency. *Ibid.* 11 *for med. J.* 2 46
 — (1931) Microbular Neuritis. *Ibid.* 5 4
 — (1932) Avitaminosis. *Ibid.* 6 65
 — (1934a) Manioc (cassava) as a Native Food in Nigeria. *Ibid.* 7 97
 — (1934b) *Ann. trop. Med. Parasit.* 28 93
 Nicholls E. (1933) *Indian med. Gaz.* 68 641
 — (1931) *Ibid.* 69 441
 Purcell, F. M. (1937) Private communication
 St. John O. H. (1936) Malnutrition in Patients Attending the Eye Department of the Barbados General Hospital (privately printed)
 — (1936) Private communication
 Scott H. H. (1918) An Investigation into an Acute Outbreak of Central Neuritis. *Ann. trop. Med. Parasit.* 12 109
 Stannus H. S. (1911) *Trans. P. Soc. trop. Med. Hyg.* 1 1
 Wright E. J. (1920) Report in the Sierra Leone Ann. Med. and San. Report
 — (1930) The A and B Avitaminosis of Sierra Leone (privately printed)

Clinical and Laboratory Notes

UNUSUAL CASE OF CHOKING

By S. SHARMAN M.B. Glasg.

ASSISTANT MEDICAL OFFICER, MANCHESTER HO. HITAL, NOTTINGHAM

A WOMAN of 37 a certified patient with dementia praecox was breakfasting with other patients.

At 8.15 A.M. she suddenly jumped up and hurried to the lavatory (followed by the nurse-in-charge) and while she tried to cough and vomit but merely brought up a little saliva. She then walked to the door leading to the ward garden (about 30 yards) and said to the nurse "let me out I want air." A few minutes later she began to turn bluish, her respirations became gasping, the nurse passed a probang and then brought her back into the ward the patient walking with support. The patient was helped on to a bed where after a few moments she collapsed. Seen 15 minutes later she was ashen grey pulseless and appeared to be dying from asphyxia rather than from apoplexy. Her respirations continued (3 per minute) but gradually despite ear linc stimulants which did not bring back the pulse they ceased and she died at 8.45 A.M.

Post mortem examination showed none of the usual signs of death from asphyxia except that there were a few crumbs of the pudding in the trachea and a slight congestion of that organ. There was some congestion of the lower lobes of the lungs but the upper lobes were normal. The heart was enlarged the myocardium flaccid and pale and there were signs of fatty degeneration in both ventricles. There was marked infarction of the aorta affecting the mouth of the coronary arteries. The whole length of the oesophagus was filled with black pudding and a piece of the skin of that food pressed against the posterior aspect of the larynx took it did not obstruct the airway.

In death from choking the heart beat continues a minute or two longer after the respiratory movements have stopped (Peterson Haines and Webster 1907).—In the present case the entry of air into the

lungs could be clearly heard for some time after the heart sounds were gone

"Where death is due to cardiac inhibition, the usual post mortem findings do not obtain, but these cases are usually characterised by death occurring with extreme rapidity" (Peterson and others, Mann 1922)—In this case death occurred thirty minutes after the first onset of the choking, during which time the patient walked about and spoke a few words

"The impaction of a bolus in the œsophagus caused death from asphyxia by pressure on the trachea in two of my cases" (Smith 1931)—My patient certainly had a large bolus of food in the œsophagus, which may have pressed upon the trachea, but the post mortem findings were more consistent with syncope than asphyxia

"Foreign bodies may by irritation induce a reflex spasm of the vocal cords leading to closure, or the mere presence of such an irritation may reflexly cause syncope, irrespective of the size or character of the substance" (Peterson and others)

In this case it appears that the patient had an attack of choking but managed to free the airway sufficiently to enable her to walk some distance and to speak, that a second obstruction occurred (part of the black pudding skin acting as a valve at that time, or by a reflex closure of glottis due to pressure from the filled œsophagus?), that this also was dislodged or overcome, and then, while air was entering the lungs, that the diseased heart went into syncope, reflexly initiated. At the inquest a verdict was returned that the patient died from syncope due to shock caused by choking

I am indebted to Dr G L Brunton, medical superintendent, for permission to publish this case

REFERENCES

- Mann J D (1922) *Forensic Medicine and Toxicology* (edited by Brend, W A) Philadelphia and London
 Peterson, F, Haines, W S and Webster R W (1903) *Legal Medicine and Toxicology* Philadelphia and London
 Smith S (1931) *Forensic Medicine* London

EXTRA-UTERINE PREGNANCY

AN UNUSUAL CASE

By R R D KARKI PAHWA, MB St And,
 L M Rotunda

A WOMAN, aged 41, was admitted to the Lady Emerson Seth Chaturbhuy Maternity Home, Amritsar, on Feb 21st, 1937, with a very large abdominal tumour which was diagnosed as ovarian cyst. For confirmation she was twice sent to the Civil Hospital, Amritsar, for radiography, but unfortunately the plant there was out of order and no skiagram could be taken

She had had amenorrhœa since December, 1935, with usual signs of pregnancy such as morning sickness. In the middle of February, 1936, she had slight vaginal bleeding which stopped after two days. In March she had acute pain in her left abdomen lasting an hour. Constipation was severe throughout and her abdomen eventually became so big that she could not get up from bed. In November, 1936, she had another attack of bleeding lasting one day for which she was treated by a leucum. At this time she also felt slight movements in her abdomen on the left side. When she came to the hospital she had had amenorrhœa for 141 months. Three years before the present illness she had had one normal pregnancy and labour

On admission there was a very large abdominal tumour all of fluid giving a thrill. No fetal parts could be felt, but there was a hard fixed lump on the right side of

abdomen just to the right of symphysis pubis. Fœtal heart sounds could not be heard. On March 9th I opened her abdomen under chloroform. A sac with very thin walls and full of fluid came in view. It was adherent to the peritoneum all round, and while I was separating it from the surrounding tissues it burst and 14 pints of blood stained chocolate coloured fluid came out. Then a hand was seen on the right side just above the umbilicus, and I realised that I was dealing with a case of extra



The fœtus and placenta

uterine pregnancy that had gone beyond full term. All the parts of the fœtus were seen, one after the other, and the placenta was found to be adherent to the intestines and to the peritoneum covering the bladder. The fœtus was removed and the placenta was very carefully separated. The abdomen was closed, a drainage tube was inserted, and the patient was put in the Fowler's position as soon as possible

The fœtus weighed 12 lb and was 24 in long, it appeared that it had been dead for some time. The placenta weighed 2 lb and the cord was 17 in long. The fœtus was very well formed (see Figure)

Radiography would probably have led me to make the correct diagnosis, but unfortunately that help was not available. The age of the woman accounted for her amenorrhœa, and therefore the condition was diagnosed as ovarian cyst. The acute pain which she had felt on the left side of her abdomen in March, 1936, was evidently the rupture of her left Fallopian tube, after which the fœtus planted itself on the intestines. I may add that recovery was uninterrupted and uncomplicated despite the fact that there were signs of chronic peritonitis when the abdomen was opened.

Dehradun United Provinces India

ACTION OF TRYPSIN ON DIPHTHERIA TOXIN

By A C BRANDWIJK, M.D

AND

A TASMAN, Chem D

THE question of the preparation of protein free antigens has come very much to the fore of late. After the successful attempts of Avery and Goebel¹, there soon appeared several communications from Topley and his co workers² in which the preparation of almost protein free antigen fractions from various strains of typhus bacteria was described. These latter antigens, which also possessed the property of stimulating the production of antibodies in animals,

appeared to be stable towards treatment with trypsin. An attempt by Stamp and Hendry² to apply a similar treatment to the antigen of hemolytic streptococci was unsuccessful. The antigenic properties were lost during digestion with trypsin.

It appeared to us of interest to investigate whether or not diphtheria toxin would be stable towards the action of trypsin.

The trypsin preparation was prepared as described by Cole⁴ from finely ground ox-pancreas. The alcoholic extract was freed from solid constituents by filtration and had a titre of 1,000⁵ with centrifuged milk. This trypsin extract contained about 25 per cent of alcohol. The diphtheria toxin had an Lf=1/13 while the minimum lethal dose (M.L.D.) was 0.003 c.c.m. 7.5 c.c.m. of the trypsin solution was added to 160 c.c.m. of toxin and the mixture protected against infection by the addition of a little toluene. As a control 7.5 c.c.m. of 20 per cent alcohol were added to 160 c.c.m. of the same toxin and this liquid also covered with a layer of toluene.

After being thoroughly shaken both liquids were kept at room temperature in the dark for five days. After this period the Lf of the control toxin had diminished from 1/13 to 1/115 while the M.L.D. remained unchanged.

The toxin treated with trypsin showed absolutely no flocculation with antidiphtheria serum. Deter-

minations of the V.L.D. with the product treated with trypsin were carried out as follows.

Each of three guinea-pigs were treated subcutaneously with 0.01 0.10 and 1.00 c.c.m. respectively in 4 c.c.m. of saline solution. The first two animals showed no reaction whatever after the injection while the third showed only a slight transient infiltration. This slight reaction may probably be ascribed to non-specific constituents present in the toxin. The product treated with trypsin was no longer toxic.

Thus diphtheria toxin is destroyed on treatment with trypsin. This strongly supports the hypothesis already made by many others that diphtheria toxin is a protein although the possibility of the toxin itself not being a protein at all but a substance very intimately attached to protein cannot of course be entirely excluded.

REFERENCES

- 1 Avery, O. T. and Goebel, W. (1933) *J. exp. Med.* 58 731.
- 2 Ralstrik, H. and Topler, W. W. O. (1931) *Brit. J. exp. Path.* 12 113. Dehnfeld, M. E. (1934) *Ibid.* 15 150. Martin, A. R. (1931) *Ibid.* 12 137. Topler, W. W. O. (1931) *Ibid.* 12 137. Wilson, J. Stacey, J. L. Challinor, S. W., and Clark, T. O. J. (1937) *Lancet* 1 35.
- 3 Stamp, T. C. and Hendry, E. B. (1937) *Lancet*, 1 237.
- 4 Cole, B. W. (1935) *Practical Physiological Chemistry* Cambridge.
- 5 Douglas, C. O. (1922) *Brit. J. exp. Path.* 3 263. Utrecht.

REVIEWS AND NOTICES OF BOOKS

History of the Acute Exanthemata

By J. D. ROLLESTON, M.A. M.D. FRCP, F.S.A. Medical Superintendent Western Fever Hospital London. London: William Heinemann (Medical Books) 1937. Pp. 114. 7s. 6d.

Dr J. D. Rolleston's work not only fulfils one of the terms of the Trust that the FitzPatrick lectures must, after delivery before the Royal College of Physicians of London be published as a separate book, but as he himself notes serves to some extent as a companion volume to his *Acute Infectious Diseases* (2nd ed. 1929). The author hopes that his book will appeal to the increasing number of readers interested in the history of medicine. Few are better able than he is to judge the extent of this increase which it is to be hoped includes some proportion of those still unqualified. The history of medicine for the qualified provides a study the appeal of which is unending; for the unqualified it should provide this and something more—a sense of perspective. A course of Trousseau and Marchison may still be recommended to the student of the acute infections in particular as a liberal education in the art of clinical observation. Dr Rolleston tells of the history of small pox, chicken pox, scarlet fever, measles, and German measles (enteric and typhus fevers he thinks are more suitably ranked in the class of continued fevers—an obvious opportunity for a second volume of which we trust the author will avail himself at some future time).

As might be expected Dr Rolleston gives a scholarly and most interesting historical account of the diseases he has selected dwelling perhaps more on the clinical than on the epidemiological aspects. The retention of the term "German measles" as a lecture title like the old spelling "Rötheln" where this is chronologically correct is to be regarded as logical in an historical account. From its complete omission Dr Rolleston evidently regards the Illustrious Duke of fourth disease as the Mrs. Harris of the acute infections and this is now the general opinion among those qualified to express one. The

cosmopolitan list of references appended to each lecture is valuable and exceptionally complete. So far as the major acute exanthemata are concerned study of this book and the relevant references should tend to diminish the unwitting rediscoveries of clinical facts already observed and recorded by our medical ancestors.

Einführung in die Allgemeine Biochemie

By Prof. CARL OPPENHEIMER, Dr. Phil. et Med. Berlin. Leiden: A. W. Sijthoff's Uitgeverij maatschappij N.V. 1936. Pp. 22.

THE author explains in a foreword that the book is an attempt to assist biochemistry to its rightful place by developing a general biochemistry that is to teach the fundamental which are not subject to the limitations of division according to the three Kingdoms of the World of Knowledge but are free from any special physiological consideration. He has divided his work into sections under headings such as living matter as a chemical system, the building substances of living matter, synthesis and degradation of foodstuffs and cell matter, the chemical mechanisms of cell processes, and the thermodynamics of living matter; and he deals largely in broad generalisations.

Whether this praiseworthy effort is a success depends on at least two things: first whether experimental biochemistry is yet advanced enough to allow of such a wealth of generalisation, and secondly whether there exist many readers to whose taste this sort of reading is likely to appeal. We ourselves hold biochemistry to be a laborious science in which the thinkers should not be allowed to outstrip the workers, a principle which applies mainly to the biological sciences. Prof. Oppenheimer tends to evade rather than face and overcome difficulties. For instance when he comes to a dangerous topic such as that of carbohydrate oxidation he says at first: "We can give here only quite a superficial picture, for the debated details are interesting only to the expert." But later sums up a situation which

he has not really defined in the facile phrase "In principle, therefore, the vast central problem is to be regarded as solved"

The student is scarcely in a position to appreciate the generalisations, whilst the lack of references would be irritating to the advanced worker who would no doubt prefer the same author's "*Chemische Grundlagen der Lebensvorgänge*"

The Common Neuroses—Their Treatment by Psychotherapy

Second edition By T A Ross, MD, FRCP, formerly Medical Director, Cassel Hospital for Functional Nervous Disorders London Edward Arnold and Co 1937 Pp 236 10s 6d

This book has already proved its value to the practitioner who seeks guidance in the labyrinth of symptoms which neurotic disorders present at every turn Dr Ross makes it clear that he could not hope to help the student to knowledge in a subject beset by theories if he were to concentrate on the difficult issues raised by these theories The book therefore is a practical guide to the everyday problems of neurotic illness rather than a text book on mental dynamics Unlike other departments of medicine in which pathology, etiology, and treatment can be clearly marked off, psychopathology and psychotherapy are closely interwoven It has been wisely said that diagnosis in this department of medicine is only arrived at in the course of treatment when investigation runs concurrently It is for this reason that books of this kind appear to be unsystematic Dr Ross is no ideologist, as his book makes clear, but he is concrete on every page and never abandons his patient to pursue a theory There remain many matters in this volume which will not satisfy the psychopathologist with an eye for systematic study of mental dynamics While Dr Ross admits his debt to Freud, he does not pay 20s in the pound The reader will be grateful to him for a very valuable handbook to the psychopathology of everyday practice

Medical Urology

By IRVIN KOLL, BS, MD, F.A.C.S., Attending Urologist, Michael Reese Hospital, Chicago London Henry Kimpton 1937 Pp 431 21s

THE title of this work is misleading By the term "medical urology" most of us understand those diseases of the urinary system that come under the care of the physician rather than of the surgeon, that is to say, such conditions as nephritis Dr Koll, however, uses the term to imply the urology of the general medical practitioner rather than of the specialist His book is designed to be useful to the general physician and to the medical student It provides a general survey of the subject, and is intended to supply just that knowledge that a practitioner requires without intruding on the province of the specialist Only those methods of examination are given which the practitioner is capable of making and only those forms of treatment described that come within his range of therapeutics For those who want more details a bibliography is supplied

Dr Koll writes clearly, gives the results of his own experience, and avoids confusing his readers with rival theories His book is well arranged and is illustrated by means of excellent diagrams and plates The omission in a book describing methods of treatment that come within the therapeutics of the general practitioner of such subjects as the treatment of urinary infections by means of the

ketogenic diet or of mandelic acid is unfortunate Our impression is that the work will prove of greater use to medical students wishing to revise rapidly their knowledge of urology than to practitioners

Rasse und Krankheit

By Various Authors Edited by Dr med JOHANNES SCHOTTKY, Abteilungsleiter im Stabsamt des Reichsbauernführers Munich J F Lehmann 1937 Pp 408 Price outside Germany M.16 20

A TREATISE on race and disease edited by a German official is likely to excite the apprehensions of a foreign reader, he may expect the virtues of "aryans" and the vices of "non arians" to figure prominently and rhetorically through the 468 pages He will be agreeably disappointed The word aryan is not to be found in the index and, with the possible exception of the concluding article by H Wülker on racial mixture and disease, there is little if anything in the treatise which suggests political prepossessions J Schottky is responsible for a general introduction and the sections on race and mental disease and feeble mindedness O Flössner deals with racial physiology, W Unverricht with race and internal diseases, B de Rudder with race and infectious diseases, G Olpp with tropical diseases, M Schubert with dermatology, B Kihn with neurology, K Beringer with metalues, F Härtel with surgery, G Frommolt with gynecology and obstetrics, W Clausen and R Grimm with ophthalmology, H Barth with diseases of the ear, nose, and throat, F W Proell with odontology, and H Auler with cancer

From the introduction onwards the difficulties of defining race, of distinguishing between racial and environmental influences, and, above all, of securing precise information are emphasised, perhaps even over emphasised de Rudder says firmly that we have no evidence at all of any fundamental differences in the reactions of different races to infectious diseases Kihn says "it is a melancholy fact that all statistical data respecting diseases are thoroughly untrustworthy" Some of the writers make as brave a show as they can with statistical comparisons sometimes of nationalities, as when the marching paces per minute of armies are compared, sometimes of alleged races, the Nordic, the Mediterranean and so on But practically all of them are oppressed by the cloud of doubtfulness in which things are enveloped, even if all are not so gloomy as Beringer who begins his summary with the words "and so ends our journey through the tangle of attempted solutions which overles an apparently so simple question." Some of the writers, for instance Olpp in his article on race and tropical diseases, side track most of the speculative questions and give a straightforward account of what used to be called geographical pathology

The book is very well illustrated and as a text-book of geographical pathology has merits The style of most of the writers is not unduly ponderous and, although a great majority of the references are to German writings, the authors are distinctly aware of the existence of other nations Of course the general problem, like the particular problem which vexed Beringer, is overlaid with difficulties At first it seems so simple, one does not need to be an anthropologist to be confident that, whatever may be the definition of race, we, the Chinese, the African negroes, and the Red Indians, certainly do not belong to the same race How easy it should be to compare their reactions to disease Then we perceive that far from being easy it is very difficult, because, among other things, we have real control

experiments only on a few simple reactions. This is so when we compare what the man in the street would call racial extremes. When we seek to compare Germans, and Frenchmen and Englishmen the business becomes almost fantastic. Perhaps one day some genius will show how the problem may be solved. He is not yet here.

Inhalation Anæsthesia

By ARTHUR E. GUEDEL, M.D. Assistant Clinical Professor of Surgery (Anæsthesia) University of Southern California School of Medicine, London Macmillan and Co. 1937 Pp. 172 10s. 6d.

Dr Guedel says in a short preface that his little book is intended to guide the anæsthetist up to and through his first few general anæsthesias. This slightly ambiguous sentence indicates pretty well the nature of the book. It deals with fundamental principles and makes no attempt to supply that detailed practical information which can really be satisfactorily given only direct from teacher to pupil at the operation table. Nor is the text cumbered with descriptions of apparatus. The book is in fact most interesting to read and unlike the usual small handbook in its constantly scientific outlook and endeavour to establish practice on logical scientific lines. It is more a doctrinal application of physiology to the anæsthetist's aims and activities than a text book and it illustrates the principles which its author has found effective in the education of students. The chart of stages and planes of anæsthesia which Guedel devised and reproduces in the book was made familiar to many British anæsthetists by Dr R. M. Waters on his last visit to this country. In the chapter headed Mechanism of Anæsthetic Requirements the author gives the best account we have come across of the relation between a patient's metabolic rate and the effect which an inhaled anæsthetic will have upon him. He supplies a logical and sensible explanation of phenomena which appear to the uninitiated peculiar and surprising. The second part of the book deals with anæsthetic accidents and here again the strictly scientific analysis of the problems presented is admirable. Throughout there are illustrative cases which are related with a dramatic intensity which is well calculated to enforce the lesson which they teach. We have but one grudge against the author his almost inexhaustible relish in the split infinitive. Many of his pages supply two or three striking examples.

Emanotherapy

By F. HOWARD HUMPHREY, M.D. BRUX. F.R.C.P. F.D.M.R.C. Camb. Honorary Consulting Radiologist to and Member of the Medical Advisory Board of St John Clinic and Institute of Physical Medicine; and EDWARD WILLIAMS, M.D. Glasgow late Physician to the French Hospital, London; Baillière Tindall and Cox 1937 Pp. 188 7s. 6d.

The authors of this book are concerned at the confusion in the mind of the public between the use of radium and its salts as a destructive agent and the exposure of patients to what they regard as the beneficial and innocuous influence of radium emanation in small dosage. In order to mark the distinction and to dispel fears they favour the term emanotherapy for what has been called mild radium therapy or radon therapy. They claim that its value though little appreciated in this country has been recognised by a formidable array of distinguished clinicians abroad, the list including

such internationally famous names as Eiselsberg, Lorenz, Novak, Wenckebach, Sauerbruch and Doederlein. The conditions in which emanotherapy is said to be especially indicated are gout, gonitosis, pelvic pain, salpingitis, sterility in women, psoriasis and chronic catarrh of the respiratory organs and the widespread uses here cited to which this treatment has been put by enthusiasts include mental disease, post-operative adhesions, high blood pressure, neurasthenia, tabes dorsalis, enlarged prostate and spinal arthritis. Most of the readers of this book will remain unconvinced by the argument that the doubtless excellent results obtained by the authors and others in such various conditions depend primarily on radium emanation, whether administered by ingestion, inhalation, subcutaneous injection, in a solution, irrigation or pulverisation. Those who want to acquaint themselves with the methods used by emanotherapists will find them set out in detail and will also be referred to many more special publications on the subject. The book is well produced and printed and the diagrams of apparatus including the inhalation tube partly devised by one of the authors are easy to follow.

Synopsis of Ano-Rectal Diseases

By LOUIS J. HIRSCHMAN, M.D. F.A.C.S. Professor of Proctology Wayne University, Extra Mural Lecturer on Proctology Postgraduate School Michigan, London Henry Kimpton 1937 Pp. 288 15s.

This is a simple practical guide in the treatment of those minor diseases of the rectum and anus that do not require major surgical operation. Almost all the procedures described can be carried out in a well equipped consulting room and for most of them the patient need not be kept in bed. None of the apparatus described is complicated or expensive and although notes on the diagnosis of the more severe affections of the rectum and sigmoid colon are included their treatment is not discussed. The most valuable point about the book is that the description of each form of treatment is so detailed that the reader can picture himself doing the operation. Methods of anæsthesia are particularly well described. The author himself favours caudal anæsthesia but also advocates spinal, sacral and infiltration methods. Inhalation anæsthesia is held to have no place in these minor operations. Some surgeons would prefer gas to infiltration anæsthesia in opening perianal abscesses but Prof Hirschman does not mention it in this connexion. The accounts of the operations for fissure-in-ano and for the removal of piles rob them of much of their terror for the inexperienced operator. The author's special modification of the ligature treatment of piles seems to be particularly valuable in cases where hæmorrhage has so exhausted the patient that the primary consideration is to stop it with as little interference as possible. Prof Hirschman seems to find his ligature operation more satisfactory than injection.

Preparation of the patient for rectal operations and post-operative care of the bowels are described not in a separate chapter but as part of each procedure. Although this involves some repetition it has a practical advantage in emphasising the importance of those stages of the treatment. The chapter on pruritus also contains many useful prescriptions. The volume is profusely illustrated with photographs and line drawings. The author touches for the most part all the methods of treatment included and he deserves praise for his clear and practical exposition.

NEW INVENTIONS

A MODIFIED BRONCHOSCOPE

THE value of direct inspection of the bronchi for diagnosis or therapeutics is increasingly recognised and measures affording improved illumination and an adequate working lumen in a bronchoscope are useful because they minimise difficulties and dangers. The modifications about to be described are mostly those of other writers, but they have been assembled and combined into one instrument with the generous advice and help of Mr Percy G Phelps, of Messrs Mayer and Phelps Ltd.

Fig 1 shows the modified bronchoscope, which can be made in various lengths and calibres. It has been found that for inspection of the main bronchi a bronchoscope of 39.5 cm by 10 mm inside diameter is most useful, for the secondary bronchi an instrument 44.5 cm by 8 mm. permits of an easy and well illuminated view, whilst a tube 48 cm by 7 mm is used for the more distal bronchi. The tube is similar to the Jackson model save that the proximal inch is widened in the vertical axis, so that the inlet of the tube is oval, this facilitates the introduction of endoscopic instruments.

Originally the instrument was equipped solely with the dual projected lighting system as used in the Negus laryngoscopes and oesophagoscopes, and I am indebted to the patentee (Mr R Schranz of the Genito Urinary Manufacturing Co., Ltd) for permission to incorporate this system of lighting. Later



FIG 2

it was suggested by Mr R Doyle, F.R.C.S., resident surgical officer at the Royal Southern Hospital, Liverpool, that the value of the bronchoscope would be enhanced if distal lighting were added, for not only would this increase the illumination for direct inspection of the bronchus, but it would also permit of the use of the Pinchin Morlock telescopes¹ through the instrument. Fig 2 depicts the special holder for use with these telescopes. The dual lighting system is removed and the telescope holder is then fitted into the sockets usually occupied by the dual lighting system. Fig 3 illustrates a telemagnifier as devised by Dr Israel² in the United States. The telemagnifier gives a magnification of $3\frac{1}{2}$ diameters, is light in weight, causes no respiratory obstruction, and can be focused to different distances for use with tubes of various lengths. It is mounted on two rods which are hinged at A near the points where they plug

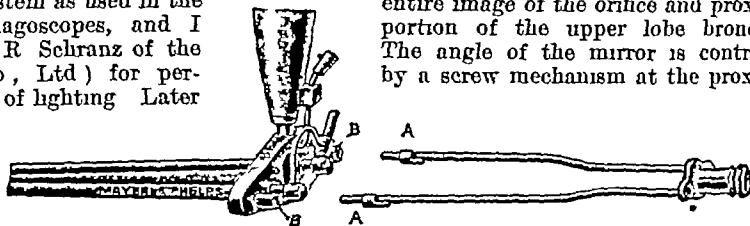


FIG 3

into the sockets B. These sockets are situated laterally to those for the dual lighting system at the proximal end of the bronchoscope. By means of the hinges the telemagnifier can be tilted instantly out of the field so that instrumentation through the tube can be carried out with the telemagnifier either in position or tilted up as desired.

Fig 4 shows a special upper lobe bronchoscope which is lighted as

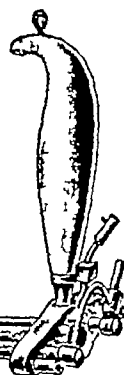


FIG 1

described above and which can be used with the telemagnifier. It is designed after the model of Dr Vistreich³ of New York. The dimensions of the bronchoscope are 36 cm by 10 mm and its distal end is cut to form a double V. At the apices of the V is hinged a small stainless steel mirror which is sufficiently large to reflect the entire image of the orifice and proximal portion of the upper lobe bronchus. The angle of the mirror is controlled by a screw mechanism at the proximal

end of the instrument which can be operated easily by the thumb. It is necessary to point out that the interpretation of the mirror image thus obtained requires some practice, but once this technique is acquired the information procured is of great interest and value.

The instruments briefly described above give excellent illumination, they possess a good working lumen, and they can be used either with distal or proximal magnification. They have been in use regularly for two years in a bronchoscopic clinic and have given satisfaction. They are made by Messrs Mayer and Phelps Ltd., of New Cavendish street, London, W 1.

J E G MCGIBBON,
M.B. Lond., D.L.O.

Hon. Aurist and Laryngologist Royal
Southern Hospital, Liverpool

³ Vistreich F (1935) *Arch. Otolaryng.*
22 634

¹ Pinchin, A. J. S. and Morlock, H. V. (1932) *Lancet* 1, 671.

² Israel, S. (1935) *Ann. Otol., &c., St. Louis* 44 285.

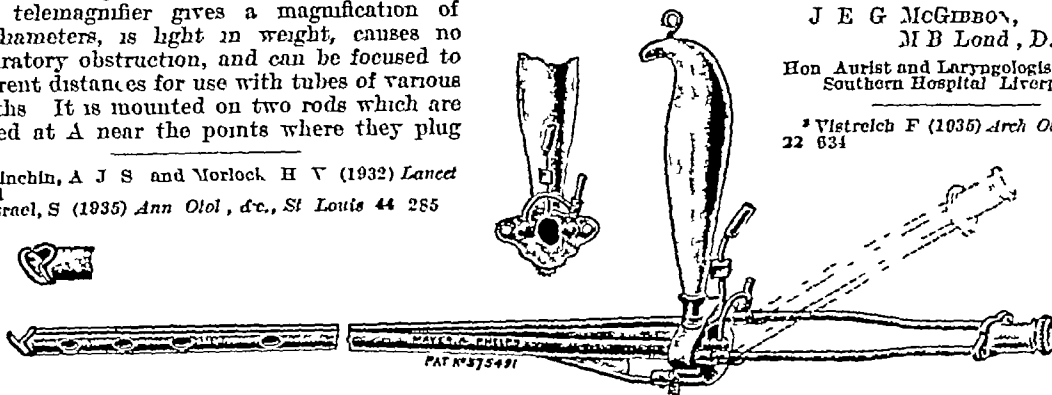


FIG 4.

THE LANCET

LONDON SATURDAY MAY 22 1937

THE LONDON BUS DISPUTE

It is regrettable that the comfort and convenience of Londoners and their visitors should have been disturbed during the Coronation festivities by the cessation of their most important means of surface transport but it would be wrong to take the short view that a strike of busmen was a sudden manoeuvre designed to take a mean advantage of a great national event. It was the culmination of years of argument during which there had been constant complaint of stress and ill health due to speeding up of the services as well as frequent lightning strikes at different garages—always against the advice of the men's union and often for apparently trivial causes. General discontent was obvious and equally obvious was the need in the public interest for that discontent to be remedied.

But here comes in a new consideration. If mechanical defects had become troublesome expert assistance would have been sought and laboratory specialists might have advised upon metallurgy or the physics and chemistry of oils just as we believe experts in acoustics were called upon to deal with excessive noise in tube trains but when the human part of the equipment showed signs of stress there seemed to be no awareness of the existence of knowledge that might be applied to the study and alleviation of that difficulty. Ever since the late war forced upon our authorities the need for study of the health and hours of munition workers there has been carried on under the Industrial Health Research Board extensive investigation of these very problems of industrial stress and the methods of meeting it by rest-pauses rearrangement of work or other wise. The results are to be found in the reports of the Board and in addition the National Institute of Industrial Psychology a non official body is at the service of employers and employed for consultation on such matters. Yet evidence at the recent court of inquiry revealed that such questions as whether a certain trip should occupy 108 or 109 minutes whether the extra minute should come off the men's stand off time and whether this was in accordance with the Board's agreement with the union had been a matter of haggle between the drivers' representatives and those of the Transport Board and a cause of exasperation to the men in the district. The logical rights and wrongs of the points concerned are immaterial that the human machinery was in danger of being thrown out of gear was what mattered to the public.

The recommendation of the court that an inquiry should be carried out as to the conditions of work and their effect upon the men is welcome but

the need for the recommendation arouses thought. A recommendation that similar inquiry should be made into financial or engineering difficulties by which the convenience of the public had suffered can scarcely be imagined for the public rightly assumes that such matters are in the hands of experts whose business it is to deal with them. The same public has nevertheless accepted without surprise that a strike is necessary in order to force attention to the human part of the working equipment. We trust that the inquiry will be held for to leave the matter to the issue of a strike is to sow the seeds of further trouble. Industrial psychology is a technical subject and when the claim arose that the men suffered stress physical or mental from driving a modern bus at modern speeds through London streets that claim called for study and perhaps planned experiment, certainly not for a process of bargaining carried out under the threat of a strike. If the general principle involved should come to be recognised as a result of the present conflict we may be saved from worse trouble in the future.

TUBERCULOSIS AMONG WILD FIELD-VOLES

MANY of the most spectacular advances in modern knowledge have taken place when specialists have been forced to look at their own subject from the standpoint of the discipline and technique of some other body's science. This fertile outcome of the interaction of the unlike in science is well illustrated by the announcement by Dr A. Q. WELLS on another page of his discovery of a tuberculous-like disease among English voles. In the foot-and-mouth disease investigation a distinguished animal ecologist Mr CHARLES ELTON has recently been called upon to help in pathological research the co-operation of a pathologist has now been enlisted for the study of some of the special problems of animal ecology being undertaken at the Bureau of Animal Population at Oxford. The early outcome of this co-operation will give satisfaction to both ecologists and pathologists and is a happy augury of a fruitful partnership in the future.

The field or meadow vole (*Microtus agrestis*) widely known as the short tailed field mouse or grass mouse (though it is no mouse) is it will be remembered a little rodent with a reddish brown back and a greyish belly about 4 inches long without its tail and possessed of a blunt head and a short disproportionate tail which looks as if it had been subjected to some untoward accident. The curious little interlacing alley ways or run it makes beneath the meadow grass must be familiar to all who know the countryside. For many years it has been known that this little mammal is subject to remarkable fluctuations in population. Even under average conditions it is very numerous in our meadows though its caution and shyness may give the casual observer a false impression of rareness. From time to time the numbers of these animals decline rapidly and on certain occasions and in certain localities they may almost disappear. They are staple articles of diet for

owls, rooks, and other predatory birds as well as for weasels, and vast numbers are known to be consumed by these enemies, but it has been considered probable that the marked and rapid waning of numbers is due to an epidemic disease and to this condition the name "vole plague" has been given. It is presumably while investigating this cause of mortality among voles, of the nature of which we are quite ignorant, that Dr WELLS has been rewarded by his unexpected and interesting discovery.

The investigations are still at a very early stage, but since February in this year 134 voles have been found with the lesions of tuberculosis and in these lesions acid-fast bacilli were present resembling *Mycobacterium tuberculosis*. In at least one strain the organism has proved virulent to rabbits and guinea-pigs though it is as yet impossible to say whether the prevailing strains are to be referred to the human or to the bovine type of the bacillus. When it is considered that the field vole is extremely common in our pastures and that many of them with open lesions must be scattering infection, the medical and hygienic possibilities of Dr WELLS's discovery become obvious. Whether the bacilli he has found in voles are pathogenic to other animals or to man remains to be seen, but it is noteworthy that they were fatal to guinea-pigs. Obviously the contamination of areas of water supply or of pasture used for feeding dairy herds from this source is a possibility that must at least be considered. In the meantime ecologists, pathologists, and epidemiologists will be equally impatient for further information.

The British voles present exceptional interest in respect to ecology and distribution. Not only does the field vole suffer from "plagues" but at times, by sudden increases in its population, it becomes itself a plague to agriculture and horticulture. Ups and downs in its population are reflected by the ups and downs of owls and other predatory species, the ecologist will have to broaden his stage to make room for such a redoubtable protagonist as the tubercle bacillus and many new problems are bound to arise. Interesting possibilities open in the study of susceptibility among a number of more or less closely allied members of the vole family. Thus there are various sub-species of *Microtus agrestis* which occur upon the heights of the Highland mountains and in the different Hebridean islands and there are at least five different sub-species of the field vole's larger cousin, the Orkney vole, which are peculiar to the different islands of the Orkneys. It will be interesting to study the incidence of the disease and the experimental susceptibility to tuberculosis of these varieties. It may be mentioned that it is generally thought that the Orkney voles (*Microtus orcadensis*) keep their numbers very steady and are not subject to the plagues which affect their relations on the mainland. Not the least instructive of the lessons of this new discovery is that the study of the parasitology of wild life, which has given up so much treasure in the past, is still an unexhausted vein.

MIDDLE-EAR DISEASE IN INFANCY

SPECIALISTS in pædiatrics and in otorhinology have during the past few years become increasingly aware of the widespread ravages of otitis media among very young children, but it is doubtful whether practitioners as a whole have yet grasped the implications of recent observations. The various contributions made to a discussion by the section of otology of the Royal Society of Medicine reported in our last issue bring out clearly the gravity of the situation. Otitis media is evidently extremely common in children under five years old, and the younger the child the more obscure are the symptoms and the more likely is the condition to be overlooked. When suppurative otitis is looked for at post-mortems on children it is very often found and the frequency of its detection in the dead body has very little relationship to the diagnosis of disease made during life. Dr J. H. EBBs in an analysis of autopsies on 880 children mostly under two years old found post-mortem evidence of suppurative otitis in 52.8 per cent and this incidence would be endorsed by most pathologists with wide experience of autopsies on children. It is clear that the clinical diagnosis of the disease in the young is far from satisfactory. Often there appear to have been no symptoms pointing to the ear as a seat of the trouble. Pædiatricians have called attention to the fact that the outstanding symptoms in many children are gastro-intestinal and that a label of "D and V" or "dysentery" may be given to cases which are subsequently, sometimes too late, found to have suppurative otitis as their main lesion. According to Dr T. RITCHIE RODGER, nearly half the cases are bilateral. And the fact that in very young children the tympanic cavity and the mastoid antrum are in such intimate anatomical relationship means that otitis almost necessarily implies mastoiditis.

An exact estimate of the contribution of purulent otitis to infant mortality has yet to be made but it is evidently a factor of considerable importance. Much more information is desirable on the bacteriology of the condition. The general opinion is that hæmolytic streptococci play a major part, but other organisms such as the pneumococci, and even intestinal bacilli, may be implicated. The rôle of the tubercle bacillus under normal conditions is small but significant, tuberculous otitis may on occasions become what amounts to an epidemic disease. Dr R. B. LUXSDEN for example spoke of an incidence of tuberculous otitis reaching nearly 40 per cent in a hospital near Edinburgh. In the light of this information a grave responsibility is placed upon all branches of the medical profession who are concerned with the health and welfare of children. Otorhinologist, pædiatrician, epidemiologist, pathologist, and bacteriologist must pool their experience and collect and correlate more data. In the meanwhile the practitioner must be on the alert to make an early diagnosis, an examination of the ears should be part of the routine examination of every sick child and those who are doubtful of

their ability to interpret what they find should falling expert help err on the side of action. Early incision of the ear-drum it is agreed is a first principle of treatment and this may have to be followed later by a more radical operation.

It is however on the preventive side that constructive action is most urgently needed. From a consideration of general principles comes every hope that this disastrous and crippling disease of infancy is preventable and the problem of the prevention of otitis media and its complications has been and still is largely neglected. The observations of OKELL and ELLIOTT¹ on the spread of streptococcal infection in ear nose and throat wards have made it abundantly clear that infection from patient to patient is a very real thing and is responsible for widespread and as yet probably only partly realised disasters. The investigations of W A BROWN and V D ALLISON² recorded in the current issue of the *Journal of Hygiene* on cross-infection in scarlet fever wards tell the same story. The first and most pressing duty of the practitioner is to realise that otitis media particularly when due to hemolytic streptococci is not only an infective but also an infectious condition and that it should be treated with the same precaution as any other highly contagious disease. The main difficulty of following this precept is of course that the source of contagion may masquerade in various clinical forms. But in cases of established local infection any carelessness or indifference that leads to its spread is a reproach to the whole profession. The limelight has now been turned on a dark corner of everyday medicine and it may be hoped that the report of the recent discussion will serve as a signal for attack from every side on this outstanding problem of child health and welfare.

CLIMATES LARGE AND SMALL

THE medical science of climate still rests on experience rather than experiment. The fashion lately has been to decri the experience to say that all air is the same and any locality as good as another. It is true that man can live at the Equator and (more or less) at the Poles but the fact remains that a journey from one to the other requires physiological adjustments and some people are sensitive enough to notice a difference even in travelling from a Yorkshire moor to a Cornish valley. Nor is this really surprising since life as HERBERT SPENCER put it 'is the continuous adjustment of internal relations to external relations' and even the comparatively crude data of the meteorologist and geographer teach us that our atmospheric environment varies. It varies in time from hour to hour according to pressure temperature wind light humidity precipitation and electric potential not to mention the obscurer influences of atmospheric ionisation or cosmic rays. It varies in place according to elevation soil shelter aspect and vegetation. Some may hold that man provided he has an umbrella is too hardy to bother about such trifles. He can operate

a typewriter or loom equally fast in Bayswater Brighton and Bombay. But can he? And does it make no difference to his output whether his office or factory is at 60° F with an open window or at 70° F with central heating? And even if climatology local and general has nothing to offer the healthy can we doubt that it has something to offer the sick whose powers of adaptation whose sensibility to influences good and bad are notoriously deranged?

As a matter of fact even those most sceptical about climatology already accept much of its teaching. None will deny for example that the activity of micro-organisms and the growth and fruiting of plants are nicely adapted to known conditions of temperature and humidity. From this it is but a step to consider as ELSWORTH HUNTINGTON³ did what is the optimum for the human species. His conclusion (which in a way supports the sceptics) was that there is not so much an optimum as an optimal range since variation rather than stability is favourable to life and the uniformity of a climate is more deadly than its heat. For the development of a high civilisation HUNTINGTON demanded a mean temperature of 64° F a relative humidity of 80 per cent and—equally important—frequent but not excessive changes. Wind and storms are helpful and in this respect the British Isles are fortunate, being situated between three great pressure and weather systems—the high pressures of the Azores the Icelandic low pressures and the continental pressures high in summer and low in winter. But the variation must not be overdone. The unduly stimulant climate has been compared to a bad driver who exhausts his horses whereas the ideal is a rhythmical urging and checking preferring the voice to the whip. How much daily variation should there be in the climate of the factory? How much can be borne by the young adult with rheumatoid arthritis and what are the means round which it should vary?

In our own country the British Health Resorts Association continues its attempt to define the essential features of various localities and its latest handbook⁴ which should be useful to every practitioner takes another step towards scientific accuracy by providing ingenious tables summarising in a few lines the invalid winter to be expected at various resorts. It is right to press for more informative meteorological records of this kind but it is even more important to assess their significance in terms of the human body. Medical climatology—if that is to be its name—must assess the powers of adaptation of the body to climatic influences in youth and old age in health and in illness. Thus conceived it becomes an aspect of medicine which must interest all who seek the efficiency of man and advance is possible in it from many directions. The industrial physiologist with his micro-climates of laboratory

¹ British Health Resorts Association. *Handbook of British Health Resorts*. London: J. and A. Churchill, 1935. Pp. 112.

² Okell C. C. and Elliott E. D. (1936) *Lancet* 2 1230.

and workshop, approaches it from one angle, the pædiatrician from another, for as BAUDOUIN² remarks, the faulty adaptation shown by many children should throw light on the means of defence against external stimuli and the way they can best be utilised. For many morbid states there is a "climate" which we should seek to promote, and it is almost ridiculous, for example, that at this time of day we should still be uncertain whether children with pneumonia should not after all be nursed out of doors.³ Dr GEORGE DAY⁴ lately mentioned that he was trying to discover the effect of certain types of weather on tuberculous patients and had reached the tentative opinion that they do best when it is positively

vile. Much information on such subjects has been gathered by W F PETERSEN in the United States and published in his "The Patient and the Weather." Hitherto it has been customary mostly to rely on impressions, but better even than the best impressions are *measurements*, and the systematic studies made during the last twenty years on non-tuberculous children in the island of Fohr⁵ near Heligoland are an example of serious effort to introduce precision where it is badly needed. We may be unable to guess whether the "climate" we recommend—be it at the seaside or in a bedroom with closed windows—will benefit our patient, but we should at least try to find out what effect, if any, it has upon his bodily functions and the course of his illness. This is a part of clinical science where we want facts.

²Baudouin G (1936) *Rev Physiother* 12 370
³See for example, Wallace H L (1937) *Brit med J* March 27th, p 657

⁴J State Med March 1937, p 157

⁵Kestner, O (1937) *Brit med J* March 13th, p 555

ANNOTATIONS

MALARIA AND SYPHILIS

THOSE responsible for the mental hospitals of the London County Council are anxious that the opportunities afforded at Horton for the treatment of neurosyphilis and general paralysis should be better known. A special unit for the treatment of syphilis of the nervous system was established there in 1925 by the L C C and Ministry of Health jointly and some 800 cases have been treated. The unit has served a second purpose, because the malariatherapy given has allowed of valuable studies of induced malaria. The methods developed by the Institute for breeding and infecting mosquitoes have been copied in other parts of Europe. Wagner Jauregg's clinic in Vienna has adopted the Horton technique for examining blood films, and the plans of the insectarium have been reproduced in Germany, Roumania, and Holland. The research on malaria, which has attracted visitors and investigators from all parts of the world, has been made possible only by team work. The cases have had medical care from one of the medical officers of Horton Hospital, the laboratory is in charge of Mr P G Shute with two assistants, the Ministry of Health, besides giving clerical aid, have allowed Colonel S P James, F R S, to direct the malaria work and establish a research centre. Since Colonel James's recent retirement, Horton has formed a liaison with the London School of Hygiene and Tropical Medicine, and Prof J G Thomson is carrying on the work. A whole time investigator, Colonel J A Sinton, I M S, with a malaria research fellowship from the Royal Society, is now at the hospital, and we are glad to learn that another whole time worker, Dr E L Hutton, with a clerical assistant, is undertaking work from the neurosyphilitic aspect, under supervision from Dr W D Nicol, the medical superintendent, who last November visited Wagner Jauregg's clinic as well as hospitals and institutions in Germany. The records of cases already treated will furnish much good material, the incidence of syphilis in families of general paralytics is now being inquired into. The hospital is also keen to treat more and earlier cases, particularly as it is hoped that advantage will be taken of the facilities for treating patients on a voluntary basis at a stage long before the necessity for certification. In this type of case very favourable results are to be anticipated, and the duration of the patients' stay

in hospital should be considerably curtailed, being in suitable cases as short as 3-4 weeks. It is hoped that the opportunities for studying neurosyphilis will attract to Horton as many inquirers as the opportunities for studying malaria have attracted during the past ten years.

SILICOSIS

OBSERVATIONS on the chemistry of some dangerous dusts made by a group of workers at the Imperial College under the leadership of Prof H V A Briscoe and summarised in two letters in *Nature* (May 1st, 1937, p 753) may throw useful light on some of the perplexities of human silicosis. Briefly their discovery is that freshly made dust may be quite different chemically and mineralogically from the rock from which it has been derived: it quickly takes up water from damp air and readily yields alkali and soluble silica on extraction with water, much in excess of the solubility of natural quartz. The same dust when it has lain some time in contact with air is much less reactive, and this accumulated dust has often been used for experiments on animals whereas in actual practice men are of course exposed to dust immediately it has been made by rock drilling or blasting. A natural inorganic particle is so arranged molecularly that, rather like an animal, it is coated with a relatively inert skin, and when it is mechanically broken its molecules are disarranged and it may become by comparison an active chemical agent. It has also been discovered that the solubility of silica from quartz dust is much reduced by mixing with finely divided charcoal, anthracite, ordinary coal, or lime, from which various possibilities in the way of prevention arise as well as some explanation of the difficulties about silicosis in some coal miners.

MUSICOGENIC EPILEPSY

It has long been known that auditory stimuli may bring on epileptic attacks, the commonest form of stimulus being a loud and unexpected noise. Music may, rarely, be a determining cause of fits, and Dr Macdonald Critchley¹ has collected notes of 20 cases illustrating this sequence of events. Of these, 4 were under his own care, 7 were reported to him by colleagues, while the remaining 9 are

¹*Brain*, 1937 60 13

extracted from the literature mostly be it noted of Russian origin. The clinical histories show little in common though it is worth noting that in 11 out of the 16 cases in which it is recorded the age of onset of the epilepsy was over twenty-five years. Dr Critchley is satisfied that the fits showed the usually accepted characteristics of epilepsy and could in no case be classed as hysterical. Often the determining factor could be exactly specified. Thus in one the music must be classical and jazz tunes were ineffective. In another it must be sad or reminiscent in quality. In another only the deep notes of a wind instrument in a brass band would cause the seizure. In another one tune only would be effective. In another only a tune that was unfamiliar; and so on. Perhaps the most interesting part of the paper is an account by a Russian man of letters who was a sufferer from musicogenic epilepsy, of his own sensations and experiences when listening to music. In some of the cases the stimulus was specific. Fits always occurred in response to the music and never in the absence of music, but other cases lacked this specificity. In discussing the pathogenesis Dr Critchley comes to no definite conclusions. He doubts if hyperventilation or variations in cerebral blood-supply are of much importance. He is inclined also to reject the proposition that the phenomenon is a conditioned reflex in the Pavlovian sense, but it is not clear that he has sufficient grounds for doing so. It is recognised that certain emotional states—namely fear or anxiety—may determine fits in one who is already epileptic and surely music may induce a variety of emotional response in those who listen to it. It might be near the truth to regard musicogenic epilepsy as epilepsy in which the fit are a response to one form of emotional stimulus. Consideration of the uncommon but fascinating sequence opens up wide issues.

PERNICIOUS ANÆMIA AND LIVER THERAPY

VARIOUS attempts have been made to deduce from the recorded mortality rates from pernicious anaemia the degree of success that has been attained with treatment by liver in various forms—success that is in the community as a whole rather than in the individual case. It is generally agreed that with an adequate use of liver a fatal termination may be indefinitely postponed in most instances. How far is that objective being attained? Following the introduction of liver therapy in 1920 the mortality rate in England and Wales declined abruptly and has remained at a relatively low level though in late years there has been some tendency for a rise to occur. P. Stocks has computed¹ that since 1920 there has been an average lengthening of life of all affected persons of about three to three and a half years. The decline in mortality has been noted in other countries—notably in New Zealand, the United States, Norway and Canada. In Canada and particularly in Ontario the registered mortality has invariably been high higher according to Hardisty Sellers² than in any other country in the world. This excess cannot he thinks be attributed in any large degree to differences in diagnostic acuity or to medical teaching and its influence on the certifying practice of doctors. Here too however there has been a dramatic reduction in mortality. In 1934 the mortality rates of both males and females were less than half those prevailing in 1911-20. The deaths actually recorded in 1934 numbered 208 whereas if

the death rates at ages in 1921-26 had continued to prevail as many as 562 would have occurred. At ages 30-40 years the mortality in 1934 was only 22 per cent of the rate in 1921-26, at 50-60 it was 36 per cent, but at ages over 70 years the mortality has changed relatively little being 89 per cent of the previous rate. This picture is best explained, as Sellers suggests, by the prolongation of life of persons affected particularly those at the younger ages. In fact, the average age at death of persons certified as dying of pernicious anaemia was 62.1 years in 1926 and 67.7 in 1934. Allowing for the general ageing of the population the average lengthening of life since 1926 is about 5 years. This result it must be noted relates to all cases treated adequately or inadequately and untreated. Sellers notes that it may be regarded as a conservative estimate of the objective efficacy of modern therapy in this disease. It is some measure of the advantage reaped by the community if treated cases alone were considered much greater improvement would doubtless be apparent.

THE OLD ASHMOLEAN MUSEUM

WE add to a recent suggestion in these columns that the present position of the Old Ashmolean is one calling for a sympathy that should take practical form in money. The fine Jacobean building was probably designed by Sir Christopher Wren though it was built by one of those working masons who took a pride in their work. It faces Broad Street is next to the new buildings of Exeter College and is only separated by a pathway from the Sheldonian Theatre. Few know its history fewer still of late years have entered its noble portico and finely lighted rooms. It was built at the cost of the University between 1670 and 1682 to house the collection which Elias Ashmole had obtained from John Tradescant. Ashmole was a man of many parts: solicitor, excise man, freeman, astrologer, botanist, chemist, anatomist, physician, herald, and author of *The History of the Garter*. John Tradescant, traveller and botanist, had a garden in South Lambeth where his name is still perpetuated in Tradescant Street just off the South Lambeth Road. He collected curiosities in many countries and Ashmole, thinking them worthy of preservation, added his own coins, medals, paintings, and the library of J. J. the astrologer. He presented them to a grateful university which caused the house to be built for their reception. The museum was housed in the top floor; the middle floor was used as a school of natural history where lectures were given on chemistry and the basement was occupied by a laboratory with furnaces and a library of books treating of chemistry. Changes took place in course of time. The books went to the Bodleian, natural history specimens were transferred to the new museums in the parks; some of the curiosities to the Bodleian galleries; others to the Taylorian and university galleries. Chemistry was abandoned by the university and was taken care of by the colleges. The Arundell marbles which had long rested against the wall of the Ashmolean found a more suitable home at the British Museum. The old Ashmolean had practically ceased to exist as a museum and was used as a mere adjunct or store for the Bodleian and as a scriptorium for those who were preparing successive volumes of the New English Dictionary.

Then came upon the scene Mr R. T. Cumber, LL.D., an energetic fellow of Magdalen College who set to work on the history of science in Oxford. He soon

found that many scientific instruments, often dating from quite early times, were stored away in the various colleges, and there was enough to form a first rate collection to which generous donors might be invited to add. The idea has already borne good fruit and the Old Ashmolean has taken on new life as a Museum of the History of Science. Its rooms are already filled with instruments, but more space and money are needed. A part of the building is occupied as a scriptorium and some little used books belonging to the Bodleian are stored in the basement. Money is wanted to buy instruments of historic interest which can still be obtained at reasonable prices, to provide cases in which to show them and for many other purposes. Dr Gunther issues an appeal therefore that the Old Ashmolean and its requirements may not be overlooked when the needs of the university are considered in connexion with "The Oxford University Appeal" which is now being circulated. We wish him success very heartily, for at present there is no museum recording the history of science worthy of the name in this country and Oxford is the place where it might well be established and made permanent.

ESTIMATION OF MALE FERTILITY

THE errors incidental to testing male fertility by the examination of condom specimens have long been known. It was these errors that led Dr Max Huhner of New York to urge that examination of the condom contents should be controlled by subsequently investigating specimens taken from the cervical canal after coitus. Returning to this plea,¹ he says that supposed necrospemia has often been due to killing of the spermatozoa by some chemical used in the manufacture of the rubber sheath. In other cases the patient, wishing to keep the specimen warm until its arrival at the laboratory, has placed the container in hot water or in front of a radiator, and the spermatozoa have thus been overheated. Huhner reports cases in which the examination of many condom specimens, with all precautions, has shown that the spermatozoa have died as early as twenty minutes after coitus. Nevertheless in the same cases spermatozoa removed from the female genitalia remained active for several hours under the microscope. He therefore concludes that spermatozoa may preserve their vitality longer in the female genital secretions than in the semen itself.

MENTAL ABILITY IN A RURAL COMMUNITY

AN interesting survey of mental ability in a rural community is reported by the research department of the Royal Eastern Counties Institution, Colchester.² The district selected contained a population of about 1500 and included a small country town. The number of children tested, whose homes were in the district at the time of examination, was 187, but a few were missed because of illness. Of these 187 children 122, or about two-thirds of the total, belonged to one "clan," all of whose members were related by consanguinity or by marriage or by both. The children were divided into pairs according to whether they were related, connected, or unrelated, and the degree of likeness of scores between any two related individuals was compared with that degree which subsisted between any two unrelated individuals. There were altogether 276 pairs of sibs, and the correlation coefficient for them with respect

to intelligence measurement was $+0.30 \pm 0.05$. This figure, the authors point out, is rather lower than that obtained for physical measurement of sibs by Pearson. If, in a random population, mental ability were entirely determined by hereditary factors, the correlation coefficient should lie between 0.41 and 0.50. It is inferred from the relatively low value of 0.30 that other factors besides heredity play a part in the ability to score marks in intelligence tests such as were used, at the same time the correlation is regarded as strongly significant and the investigators have little doubt that in their group brothers and sisters are more like each other than two children taken at random.

The distribution of intelligence was analysed according to paternal occupation. Four groups were distinguished under the general headings of professional men, traders, artisans, and labourers. In the intelligence of the children, there was found to be a steady gradation down these four groups. The children of unskilled labourers were found to have a mean intelligence nearly a third of the standard deviation lower than the general level. It is perhaps to be regretted that the authors did not examine the sizes of the sibships to which the children in these four groups belonged. A survey of the incidence of mental defect was also made. It included not only children but persons of all ages. A high incidence, 1.6 per cent of the total population, was found. Commenting on the magnitude of this figure when it is compared with the corresponding figures for rural areas given in official surveys, the writers suggest that, if strict canons are observed in these investigations, a larger proportion of individuals in rural communities might be counted as defective than has been officially recognised. Mental defect and disorder were also found to occur with greater frequency in the interrelated "clan" than in the rest of the population.

FREQUENCY OF ARTIFICIAL PNEUMOTHORAX REFILLS

Franklin and his colleagues¹ are dissatisfied with the "average" practice of starting a pneumothorax with two or three daily injections and rapidly increasing the interval until air is only given twice or even once a week. This routine method is open to the theoretical objection that during the interval the lung usually expands again, and the pressure to which it is subjected is thus by no means uniform. With this in mind refills were given much more frequently than usual in a series of 65 patients (4 bilateral A.P.) treated between July, 1935, and January, 1936. In some cases air was given daily for several weeks, and the average time before satisfactory collapse of the pulmonary lesion was only 10.4 weeks compared with a previous average of 22. This meant, of course, that the patient's period of disability was much shortened. Two possible objections to the new scheme are mentioned: the first is the additional cost to the patient when the refills are not done in an institution where such treatment is included in the terms quoted; the second is the possibility that the repeated slight trauma to the pleura caused by the passage of the needle may encourage pleural effusions. Effusions developed in 16 (30 per cent) of the 53 cases in which it was possible to induce a pneumothorax, but this figure seems no higher than that found in series treated with less frequent refills. The present paper is published only as a preliminary report and it cannot be decided whether the method

¹ J. Obstet. Gynaec. April 1937 p. 334.
² Matthews, M. V., Newlyn, D. A., and Penrose, L. S., *Sociological Rev.* January 1937 p. 1.

¹ Franklin, R. M., Zavod, W. A., and Percy, H. E., *Amer. Rev. Tuberc.* April 1937 p. 513.

described really represents an advance. It does appear however that frequent refills give more rapid collapse of the lung and the experience so far gained does not suggest that they bring more complications.

LIPIOD PNEUMONIA

It has often been said that Nature contrives new diseases to take the place of those that medical science has controlled. It would seem however that Nature and science manage sometimes to work hand in hand. Thus the new disease known as lipiod pneumonia is as a rule directly attributable to the injudicious use of oily solutions injected into the nose of young infants or to the aspiration of cod liver oil or cream by those that are feeble or rebellious. A considerable number of deaths from this cause have been reported in America since 1926 and these probably represent only a small proportion of the whole. So serious is the condition considered that a brochure about it has been issued to the medical and nursing personnel of the department of health of the city of New York. In this Dr C. F. Bolduan points out that lipiod pneumonia is seen principally in debilitated infants under two years of age and in those with difficulty in breathing or swallowing. In fatal cases the repeated instillation of nasal drops has commonly been followed by repeated coughing or asthmatic attacks and the signs and symptoms of a low grade pneumonia. Where cod liver oil is the responsible agent the pneumonia has usually been more acute. Although complete recovery appears possible the pneumonia often progresses and the infant dies from intercurrent infection. Post mortem the lungs may show the presence of large amounts of oil and changes due to reaction to a foreign body. Dr Bolduan quotes a number of eminent paediatricians on the inadvisability of giving oily nasal drop to young infants. Although the condition is apparently less common in this country than in America the warning is useful.

THE BILBAO CHILDREN

THE HOME Office has given permission for the landing in England of 4000 refugee children from the Basque town of Bilbao. It was stipulated that there should be 1800 boys and 2200 girls, all between five and fifteen years of age and that they should be accompanied by 200 adult women teachers and attendants and 30 priests. The National Joint Committee for Spanish Relief which has made the arrangements sent two doctors and two nurses to Bilbao. The doctors were to examine the children before they went abroad to ensure that no infectious diseases that might involve lengthy quarantine periods were among them. They took medical supplies with them since these are very scarce in Bilbao. The nurses both speak Spanish and have a supply of medical cards which will furnish a medical record for each child; they are travelling back on the ship the Basque steamer *Halana* which has already carried thousands of children to France. The doctors and nurses reported that they had to work very hard under considerable difficulties. Air raids frequently interrupted the work and they were forced to do it from 8 to 12 at night at which time there have so far been no air raids. The *Halana* is expected at Southampton at the end of this week and the children are in the first place being put in a large camp which will serve as a clearing station and a quarantine camp if necessary. This has been erected at North Stoneham near Southampton and is in charge of an admiral's tractor with long experience of such camps.

Damo Janet Campbell M.D. has been assisting with the arrangements in Southampton and is an active member of the committee dealing with this problem. Already 2000 of the children have homes waiting for them, the Salvation Army having offered to take 400 and the Roman Catholic Schools and Homes 1200. The remainder will be accommodated in groups in homes and colonies organised by the National Joint Committee for Spanish Relief. Those who are familiar with the situation of Bilbao will hope that the committee may soon get enough support and offers of help to justify the rescue of more of the children congregated in the town. The address is 35 Marsham street London S.W. 1.

OPIUM ADDICTION

ADDICTION to opium or its derivatives is rare in this country but unfortunately shows a selective incidence on the medical profession since of 630 known addicts in 1935 about 110 were doctors. One of the main difficulties encountered in its treatment is the depression, insomnia and other distressing symptoms that accompany withdrawal and especially rapid withdrawal of the drug. Various means of reducing these symptoms have been tried and on p. 1221 will be found an account of the use of the patient's own serum reinjected for this purpose. Introduced by Modinos in 1929 the method has been gaining popularity in the Orient and Woo² is able to report on no less than 1000 cases thus treated by him and his colleagues at Hong Kong in 1936. Of these 872 smoked opium, 48 swallowed opium pills, 11 took opium plus opium wine, 38 took opium and heroin pills and 33 took heroin pills. He treated his cases as out-patients and no restrictions were put upon them—a severe test for any method. He gave on the average seven injections of blister fluid on alternate days with a total dosage of 18.5 c.c.m. per patient. He says that after the first dose most of the patients found that they needed only half their usual dose and that the drug became definitely distasteful to them after the second or third injection. His criterion of cure was complete abstinence from the drug for a month with improvement in weight and general health, and he reports 16 per cent of cures while a further 18 per cent were able to reduce their dose by nine tenths. Only 24 per cent showed little or no improvement. Various unpleasant symptoms appeared during treatment: the commonest being constipation, insomnia, and epinorrhoea. Black,⁴ writing from Manchuria says that doses as large as 10 c.c.m. sometimes cause a reaction and discomfort and he therefore prefers 5 or 6 c.c.m. while even 1 c.c.m. has an appreciable effect. Schneider⁵ in 1933 had trouble with burst blisters and was led to try boiled milk as an alternative to serum. In assessing the value of these and other remedies for drug addiction we are faced with the familiar difficulty of separating the effect of suggestion from that of the actual method employed—the brilliant results of cathartic use of some form of therapy—especially where as here there is an element of the dramatic—are often followed by the comparative failure of more sceptical workers using the same method. Dr Vivian's cases which were treated in a nursing home under strict supervision showed better

¹ The Traffic in Opium and Other Dangerous Drugs. Report to the League of Nations by H. M. G. Vivian, M.D., in 1931.

² A review of some recent literature of drug addiction by Dr J. W. Adams appears in *Br. J. Med.* 4, 112, 113, 114, 115, April, 1937.

³ Woo, S. W. (1937) *Chin. med. J.* 5, 31, 32.

⁴ Black, J. W. (1936) *J. med. med. sci.* 2, 35, 1.

⁵ Schneider H. (1933) *J. Amer. med. Ass.* 101, 1.

results than did Dr Woo's out patients, and it seems probable that some at least of her success was due to the belief she has acquired in the method and the steady transference of this belief. She wisely points out that "autoserotherapy" cannot cure the tendency towards drug addiction, but it will nevertheless be very useful if it enables the patient, without much discomfort, to get rid of his physical craving. Dr Adams's conclusion¹ about it is that apparently it is "simple and reasonably successful in the case of moderate opium smokers and eaters and does assist withdrawal considerably. It has however its limitations. It is rather painful, it may fail in severe cases and is not very successful where the drug is injected. Also, relapse seems to be as common as with any of the more usual methods."

MEDICINE AND PEACE

MANY feel that if the medical profession, as such, is to help in promoting peace it will do so best by demonstrating the emotional disorders that give rise to war and the means by which nations and individuals may be contented. The Medical Peace Campaign (whose activities are described in our correspondence columns) now has a psychological section, and its bulletin for April contains many suggestions about the kind of action that doctors may fittingly take to expose "false stimulation of the instinct of self preservation." Those who would prefer to read a straightforward statement of one medical man's opinion on the present menacing situation will find it in a pamphlet by Dr J Burnett Rae¹. He writes for the layman, and he writes at the request of a particular body, the Industrial Christian Fellowship, but many of his professional colleagues and many outside the Church will be thankful to see their scattered opinions so well expressed. Dr Rae believes that we shall never prevent war by dwelling on its horrors or by pointing to its senselessness. War is comparable to insanity but in a psychosis even the most absurd delusion has a meaning, the symptoms are a blundering attempt at cure and adaptation. Unfortunately the nations to day are too busy attending to their weapons, or watching those of others, to give more than academic attention to the fundamental causes of war. Dr Rae counters the argument that primitive human communities are necessarily aggressive, and contends that the future is not with those who use their power to trample upon the weak but with those who have a care for them. If we cannot change our nature we can at least change our behaviour. The real solution is not extermination of other people's point of view but understanding of it. At the same time we must be loyal to our own ideals and make them as attractive as possible to the other type of mind. The kind of peace called "non war" is not an end in itself. The peace we seek must be positive.

THE COLONIAL SERVICE

UNTIL recent years, in spite of some abortive attempts at unification, the colonial services consisted of a series of independent and unrelated public services attached separately to each dependency, although under the general coördinating control of the Colonial Office. In 1930 what is known as the Warren Fisher Committee made strong recommenda-

tions in favour of unification and these recommendations were approved by the Colonial Conference of that year and by the then Colonial Secretary, Lord Passfield. The history of the further developments of this policy is set out in a pamphlet (No 475) entitled "The Colonial Service" issued by the director of recruitment at the Colonial Office. In 1932 a start was made by the creation of a unified Colonial Administrative Service with a definite membership, a common method of entry, a general system of training, and a schedule of posts to any of which a member might be appointed. Development has since proceeded by the setting up of other unified branches on a similar plan, a legal service being inaugurated in 1933, a medical service in 1934, and forest, agricultural, and veterinary services subsequently. The introduction of equivalent terms of service in all dependencies is a matter of great difficulty, as allowances must be made for the very considerable differences which exist in climate, cost of living, and the financial circumstances of the various Governments. Considerable progress has, however, been made in a number of colonies towards uniformity in regard to salary scales, pensions, provision for widows and orphans, and the granting of leave and free passages.

The medical service, which at present has some 600 members, including women, offers a wide professional scope. The majority of posts are in tropical Africa and Malaya, so recruits are usually sent for a course at one of the schools of tropical medicine before going out. Later they may concentrate on public health and preventive medicine, departmental administration, a specialty, or research, or on clinical medicine. The appointments are intended to be whole time and members of the service must not count on being able to augment their salaries by private practice, though this is permitted in some stations. There can be no doubt, however, that in its present form the service is one which deserves the serious consideration of medical men at the beginning of their career.

On May 25th and 27th and June 1st at 5 P.M. Dr Edwin Bramwell will deliver the Croonian lectures of the Royal College of Physicians of London. His title will be *Clinical Reflections upon Muscles, Movements, and the Motor Path*.

To celebrate the fiftieth anniversary of the Bassini operation, the University of Padua is publishing two volumes of "Writings on the Surgery of Hernia" containing the original papers of Bassini and contributions to the study of hernia by surgeons in various parts of the world. The Italian Surgical Society has called for June 6th in Padua a special meeting, in the course of which, after two reports on the surgery of inguinal hernia (S Spangaro) and on the surgery of crural hernia (A Austoni) the various problems of hernia surgery will come under discussion. British surgeons wishing to attend are asked to write to the Clinica Chirurgica della R Università di Padova, which will send detailed information.

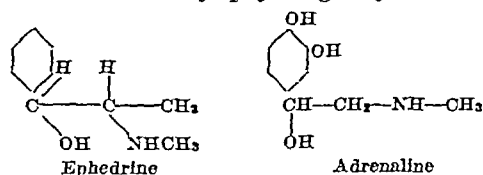
GLASGOW POST GRADUATE MEDICAL ASSOCIATION—A general medical and surgical course will be held by this association from August 16th to Sept 10th at the Western Infirmary, the Royal Infirmary, and the special hospitals of the city. A number of clinical assistantships will also be available to graduates who wish to make a detailed study of one of the specialties. Further information may be had from the secretary of the association Dr James Carslaw, 9 Woodside terrace, Glasgow, C 3.

¹ Psychology and the Problem of War. By J Burnett Rae M.B. hon. physician for psychological medicine. Croydon General Hospital. Published by the Industrial Christian Fellowship. 4 The Sanctuary, Westminster London SW1. Pp 30. 3d.

It is also prepared from yeast, *aspergillus*, and *rhizopus* and is approximately half as effective physiologically as auxin *a*. The total growth substance content of urine is about 80 per cent auxin *a* and 20 per cent hetero auxin. So far it has not been determined if animals make use of these auxins.

PLANT EXTRACTS WHICH ACT LIKE ANIMAL HORMONES

Cases have been cited by Walker and Janney (1930) in which extractions of male and female catkins, sprouted oats, rhubarb leaves, and yeast produced oestrus in castrated mice. Also Skarzynski (1933) has isolated an oestrogenic substance from female willow catkins, which possessed properties identical with those of trihydroxyoestrin prepared from female urine, for solubility, absorption spectrum in the ultra violet light, and melting point of the acetyl derivative. The plant substance was less active physiologically, containing 1000 mouse units per mg. as compared with 4000 mouse units per mg. of the animal hormone. Butenandt and Jacoby (1933) have also isolated a substance, "tokokinin," from palm nut oil which is chemically identical with α -folliculin, $C_{15}H_{22}O_2$, gives the same rotation for absorption spectrum in the ultra violet light and the same physiological action. Other examples are "glukokinin," which reduces the concentration of blood sugar in a way which is comparable to the action of insulin, and has been prepared by Collip (1933) from yeast, green leaves and roots, and ephedrine, which is chemically related to adrenaline and behaves similarly physiologically.



It is obtained from *Ephedra vulgaris*, a Chinese plant, the stems of which have been used medicinally by the Chinese for five thousand years (Harrow and Sherwin (p. 123) 1934).

It therefore appears that plants produce substances which are analogous to animal hormones and that animal excretions can be used as a source of plant hormones, but it seems doubtful whether the animal body makes use of the auxins which are available in vegetable foods.

EXPERIMENTS WITH OTHER ANIMAL HORMONES

Corresponding botanical investigations on the possible influence of various other animal hormones on plants have been carried out in recent years. Hávás and Caldwell (1935) treated tomato plants and hyacinths with Richter's orchitis extract, Richter's Glandobulin (prolan A), Richter's Glanduatin (extract of the anterior lobe of the hypophysis) and Cortigen (extract of the suprarenal cortex), adrenaline and thyroid extract without showing any marked effect on the growth or flowering of the plants. Glandobulin had a toxic effect on tomatoes. Other workers on the effect of extract of the anterior lobe of the hypophysis are Hykes (1933) who found that opening of leaf buds on dormant branches of certain trees was inhibited by concentrated solution and stimulated by dilute solution of the extract, and that roots of willow and poplar cuttings were longer in the dilute solution. and di Pascal (1936) who found addition of the extract accelerated germination of seeds and that an alkaline extract solution added

to nutrient solutions accelerated growth in some species and had no influence in others. Large doses caused damage to roots and inhibited growth.

For insulin and adrenaline Wasicky (1934) claims an intensification of starch formation from d-glucose in plant cells, and Hykes (1933) found an increase in quantity and size of leaves produced on branches placed in insulin solution, which was greater in dilute solutions. He found that adrenaline in dilute solution accelerated opening of leaf buds and stimulated root growth in willow and poplar, but that concentrated solutions had an inhibitory effect.

Experiments with extract of suprarenal cortex have been performed by three Italian workers—de Gaetani (1929), Occhipinti (1930), and Agostini (1930)—who found that "cortical" stimulated vegetative growth and accelerated reproduction in the water plants, *Lemna minor*, *Azolla corirolana*, and *marisla*.

Thyroid hormone has been tested on bulbs of hyacinth, narcissus, and allium, various species of seedlings, *Lemna minor*, plants of *Aster sinensis*, and branches of various trees. Budington (1925) noted greatly decreased length and increased thickness in roots on narcissus bulbs grown in solution of thyroid extract in water. Microscopic examination showed that the specialised tissues of the root extended nearer the tip in treated roots than controls and he suggested that the precocious development of this tissue was comparable to the precocious development produced in larval amphibia on treatment with thyroid, since new tissues in roots and larvae both originate from unspecialised masses of tissue, the differentiation of which is stimulated by thyroid. Scaglia (1929) noted decreased mass and more rapid development of inflorescences in hyacinths treated with thyroid. Agostini (1930) found little difference in growth of *Lemna minor* or *Azolla corirolana*. Hykes (1933) showed that leaf buds opened earlier when dormant branches were placed in thyroid solution and roots developed earlier on willow and poplar branches than on controls. Chouard (1934) found that branches grew to be 25 per cent longer than controls on plants of *Aster sinensis* treated with thyroxine in solution in water, but no influence was noted on rate of flowering. Davis (1934) treated *Pisum sativum* seedlings with sodium salt of thyroxine in water and culture solutions resulting in shorter, slightly thicker, less branched roots in treated plants but no difference in the green parts. Narcissus and allium bulbs injected with thyroxine flowered earlier but produced shorter roots and foliage. Florentin and Ehrenfeld (1935) have made microscopic examination of roots of *Allium cepa* grown in thyroxine. Less rapid growth was evident at the beginning of treatment which was accompanied by 43 per cent more mitoses in the root cells of the treated plants, than those of controls. This is a similar effect to that described by Budington in narcissus roots. Experiments performed by me (1937) showed that *Phaseolus multiflorus* seedlings transferred from distilled water to solutions of thyroid extract containing 0.1 c.c.m. per 100 c.c.m. distilled water responded by marked decrease in growth in length of root. It was not considered that shoot growth was influenced. Oats and radish seedlings treated with solutions of different concentrations indicated a stimulatory effect to growth of roots and leaves in dilute solutions and an inhibitory effect in greater concentration. When using thyroid extract, in spite of careful sterilisation of vessels used, after several days solutions became contaminated with bacterial slimes and moulds. This condition was also noted by Davis for thyroxine and by Tucker for ketohydroxyoestrin.

Parathyroid hormone was used by me (1937) on oat seedlings. Doses of 2-8 Collip units resulted in shorter length and slightly thicker roots but had no effect on growth of coleoptiles and leaves. A summary of the experiments is given in the accompanying Table.

TABLE SHOWING RESULTS SUMMARIZED

Hormone preparation	Experimental plants	Results
Ovarian—Progynon— β -folliculin β -folliculin	Hyalcinths, lilies, bulbs, seedlings flowering plants, branches	Contradictory—possibly flowering accelerated stimulated growth
Alkaline salt of folliculin	Hyalcinths	Flowering accelerated
Dihydro-folliculin	Hyalcinths, lily of the valley, <i>Aster sinensis</i>	Stimulated growth stimulated flowering
Theobal Ketohydroxy estrin	Bulbs, seedlings cuttings	None toxic
Equiline Equikeline	Hyalcinths and lily of the valley	Stimulated growth greater effect in alkaline solution
Orchitide	Hyalcinth	None
Anterior lobe of hypophysis	Dormant branches of trees	Dilute solution opening of buds and growth in roots stimulated
	Seedlings	Stimulated germination and growth in some species
Prolan A (glands bulbous)	Tomatoes and hyalcinths	Toxic
Insulin	Hyalcinths	Intensified starch formation from d-glucose.
	Branches of trees	In reversed quantity and use of leaves
Adrenaline	Tomatoes	None
	Hyalcinths	Intensified starch formation
"	Branches of trees	Accelerated opening of buds
Suprarenal cortex—cortigen	Tomatoes	None
"cortical"	Water plants	Stimulated growth and reproduction
Thyroid	Hyalcinth, <i>Narcissus allium</i>	Inhibited growth in roots; stimulated mitoses in cell
	Branches of trees	Leaf buds opened earlier
Thyroid Thyroxine Na salt	Seedlings	Inhibited growth in roots.
Thyroxine Na salt	<i>Narcissus</i>	Accelerated flowering
Thyroxine	<i>Aster sinensis</i>	Increased growth of stem
Parathyroid	Seedlings	Inhibited growth in roots

Note.—In several cases dilute solution stimulated growth and more concentrated solution inhibited growth.

Consideration of the results claimed for the influence of animal hormones on plant growth and development shows that some reaction certainly occurs when plants are subjected to treatment. Whether this can be ascribed to definite response by the plant to the hormone in a similar way to the animal response to that hormone is another matter. The results for the follicular hormone are very conflicting but the balance of evidence seems to favour an auxin-like response of increased vegetative growth. The

increased growth after treatment with the pure crystalline substance does not entirely support the theory that the auxin-like effect is due to impurity in the preparation but the evidence for the presence of auxins in animal urine and female hormones in plant tissue makes it seem quite credible that the behaviour of both could be similar physiologically. There are insufficient data to give definite conclusions on most of the hormones but it certainly seems as if the uniformly found effects of thyroid extract can be considered as an indication that it affects plant tissues in a way similar to animal tissues by the stimulation of cell growth by division. This is of particular interest from the botanist's point of view since there is very little definite knowledge of the influence of auxins and other substances upon cell division.

Though much work remains to be done there is already sufficient evidence that the subject is one of importance to medicine, veterinary science and botany. In particular the possibility that the raw materials of some animal hormones may be derived from plants may have to be taken into account in interpreting the symptoms of deficiency diseases.

REFERENCES

- Agostini A. (1930) *Scientia Biol.* 5, 333.
 Arlin L. D. (1937) *Ann. Bot. Lond.*, in press.
 Boudinot R. A. (1925) *Biol. Bull. U.S. Nat. Hist.* 48, 83.
 Huttenlocht, A., and Jacob, H. (1933) *II. ppe. Sci. 218* 101.
 Chonard J. (1931) *C. R. Soc. Biol. Paris*, 117, 1180.
 Collip J. B. (1932) *J. Biol. Chem.* 86, 313.
 Davis E. J. (1932) *Plant Physiology* 9, 37.
 Florentin E., and Ehrenfeld M. (1935) *C. R. Soc. Biol. Paris* 118, 1003.
 Gaetani L. de (1929) *Scientia Biol.* 4, 13.
 Harder H., and Hörter, I. (1934) *J. Physiol. Lond.* 80, 1.
 Harrow B., and Petersen, C. (1934) *The Chemistry of the Hormones*. Baltimore.
 Hays, L., and Caldwell J. (1935) *Ann. Bot.* 41, 29.
 Hylke O. V. (1933) *C. R. Soc. Biol. Paris* 113, 69.
 Janot, M. J. (1931) *C. R. Acad. Sci. Paris* 195, 11.
 — (1933) *Ibid.* 200, 1235.
 Kell J. (1935) *Lancet* Brit. Ass. p. 600.
 Oeschpmitz G. (1930) *Scientia Biol.* 5, 303.
 Paschel, I. G. de (1930) *Physiol. Abstr.* 20, 320.
 Scaglin, G. (1929) *Scientia Biol.* 4, 261.
 Schoeller W. (1932) *Lancet*, 1, 3.
 — and Goebel H. (1931) *Biochem. Z.* 272, 15.
 Skarynski, B. (1935) *Nature Lond.* 131, 60.
 Tischer M. A. H. (1935) *Ann. appl. Biol.* 22, 610.
 Walker B. S., and James J. C. (1929) *Endocrinology* 14, 39.
 Wessely, R., Bradner D., and Hanke C. (1931) *Biol. Abstr.* 8, 1855.

MEDICINE AND THE LAW

Epilepsy and Workmen's Compensation

Martin v. Finch in the Court of Appeal last month was a workmen's compensation case in which the workman suffered from epileptic fits to the knowledge of his employer. His wife said he had fits fortnightly and sometimes weekly. He worked as a hand drainer. His usual hours ended at 5.30 p.m. but on the day of his death he had been ordered to leave his work at 5 p.m. and take his tools to the field where he would be working next day. A quarter of an hour later he was found dead by the side of his bicycle near the field. The county court judge found as a fact that the workman had fallen from his bicycle in a fit. The deceased had often been attended by a doctor for injuries due to falls from his bicycle which he had to ride every day from his home about four miles away. He had been warned not to bicycle but he had no other way of reaching his work.

The Court of Appeal agreed with the county court that the accident happened in the course of his employment since at the time of his death he was taking his tools under his master's orders to him in a place of work. But the accident to justify the award of statutory compensation must have arisen out

of" as well as "in the course of" the employment In 1933, in *Lander v British United Shoe Co*, the Court of Appeal disallowed the claim where an epileptic workman fell on a floor which was not found to be dangerous There had been a different result in 1905 in *Wicks v Dowell*, where a workman's duty obliged him to work close to an open hatchway He fell into the hold below during an epileptic seizure, and there was an illuminating judgment by Lord Justice Cozens Hardy The employers had argued that the consequences were too remote to make them liable The truer view, said the Lord Justice, is that everybody brings with him some disability It may be disability arising from age or some other drawback An old man is inherently more likely to meet with an accident than a young man, but an employer could not excuse himself on that ground The same consideration applies to a tendency to illness or fits If a man with such a tendency is told to go to work in a dangerous position and there meets with an accident, the accident none the less arises "out of" his employment because its remote cause is to be found in his own physical condition Applying these views of Cozens Hardy, L.J., to the recent case in the Court of Appeal, the Court took account of the facts that the workman had been carrying his tools when he fell off his bicycle and that the employer, knowing of the epilepsy, had let him go off on the bicycle The Court concluded that it was not epilepsy alone which caused the accident, but a combination of the epileptic tendency with the fact that the dead man was placed in an unstable and dangerous position And so the widow is held entitled to compensation

PARIS

(FROM OUR OWN CORRESPONDENT)

A DOCTOR DE FACTO

THE age of miracles having returned, René Hecker entered the French army as an accountant and left it as a doctor After the war he settled in Flavy le Martel where for some 17 years he devoted himself to the care, often gratuitous and always devoted, of the sick Prosperity, the respect and affection of the community from the mayor downwards, and a wife and family—all these things were added unto him Then the Nasta law came into effect with its requirement that all French medical diplomas must be registered in one central office Hecker was invited to conform to this law but could not His credentials, such as they were, proved to be provisional—stop gap army permits to carry on as a surgeon what time he sought original documents lost, stolen, or strayed This spring at Saint Quentin Hecker was prosecuted for the illegal practice of medicine, and for several days he made headline news He was game to the last in spite of a facetious judge and an inquisitive prosecution But the surgeons and physicians he cited as his mentors at Strasbourg in his student days lacked the flesh and blood required of a witness in a court of law, whereas the witnesses for the prosecution who testified to having known him as an accountant were disconcertingly real To create a diversion, he rang the curtain up on his therapeutic achievements Let but his colleagues see him operating or otherwise caring for his patients, and how could they doubt the genuineness of his claims? To which the judge retorted that the question at issue was not his therapeutic prowess but his legal rights to the title of doctor Nothing daunted, Hecker paraded one grateful patient after another, all snatched from the jaws of death, more or less They

were all very pathetic but not quite convincing And in due course judgment was given against the defendant who was fined 1000 francs for the illegal practice of medicine and ordered to pay 5000 francs in damages to the local medical syndicate which had prosecuted him Still refusing defeat, he has appealed against this judgment

VIENNA

(FROM OUR OWN CORRESPONDENT)

KLEIN, ERDHEIM, AND HALBAN

THE medical faculty of the University has lost within ten days three of its most eminent members Prof Solomon Klein, the Nestor among Vienna's medical men, died at the age of 92 while on a visit to Budapest He was well known as one of the best ophthalmic surgeons of his time and as the originator of many new methods of diagnosis and treatment of diseases of the eye He will be remembered with regret by many of the doctors from abroad who visited the ophthalmological department of the Vienna Poliklinik while he was in charge

Prof Jacob Erdheim, the famous pathologist, died suddenly at the age of 63 He was a pupil of Weichselbaum, who early recognised the outstanding qualities of his assistant and gave him every help in his career Erdheim soon became interested in the branchogenous structures He discovered the relation between calcium metabolism, rickets, and the development of the teeth He later began to study the pituitary gland ("Erdheim tumours", adenomata of the pituitary, the hypophysis in pregnancy), and he was also an authority on the histopathology of bones and on the pathology of the blood vessels During the war he studied problems of bacteriology and hygiene His classes were among the best attended in the University and his pupils came from all over the world, attracted by the lucid presentation of his subjects

Prof Josef Halban came from an old Viennese family well known in public life and he himself was intimately associated with the city all his life He studied there, acted as assistant to Prof Schauta, and in 1909 was appointed professor of gynaecology In 1910 he became the director of the gynaecological and obstetrical department of the second biggest hospital in Vienna (Wiedener Krankenhaus) and he held this post until his death A few years ago he was nearly appointed professor ordinarius of the University Clinic but at the last moment his nomination was disallowed because, like Klein and Erdheim, he was of Jewish birth Halban was an original thinker and as long as thirty years ago he had realised the importance of the endocrine glands and had recognised the placenta as an internal secretory organ Indeed, his intuitive and imaginative grasp of the function of the glands was the foundation of the modern conception of hormones He collaborated with Prof Tandler in several well known text books on gynaecology and obstetrics A brilliant but cautious surgeon, he had an enormous private practice, perhaps the largest in central Europe He was a lover of art and music and he married Selma Kurz, the singer

THE SUPRARENALS AND ANGINA PECTORIS

At a recent meeting of the Vienna Gesellschaft der Aerzte Dr Roab reported on a new treatment he has used in cases of angina pectoris Noting the similarity between the symptoms of this condition and those produced by an outpouring of adrenaline into the system, Roab thought it possible that the

attacks are usually attributable to the action of adrenaline secreted in large quantities on a cardiac muscle which has been injured by coronary sclerosis (This does not of course apply to attacks of coronary thrombosis.) Accordingly he attempted to diminish artificially the output of the secretion of adrenaline and especially its excessive secretion by fits and starts. A suitable means of inhibition was found in irradiation of the suprarenal region with X rays. A surface of 8 by 10 cm. on the right and the left side was exposed to 200 r on three consecutive days, 600 r being thus applied over each adrenal gland. (In some cases only one side was exposed daily so that the course lasted six days instead of three.) This very moderate dose nearly always sufficed and the suggestion is made that sufferers from angina pectoris may have adrenal tissue which is abnormally sensitive to X rays, just as the thyroid gland may be hypersensitive in hyperthyroidism. Of the 17 patients carefully observed only 2 showed no improvement after the irradiation and Roab thinks the treatment is worth trial wherever there is no contra-indication. In the ensuing discussion Prof. Schiff pointed out that it would be really worth while to find out whether Roab's assumption—viz. that diminution of the adrenal output is responsible for the improvement—is correct. This can be done he said without resorting to X rays simply by administering ergotamine which inhibits adrenal function. Dr Scherf said he had been working on similar lines but so far his results had not been absolutely convincing. Dr Zimmermann was struck by the fact that only 2 of Roab's 17 patients had hypertonus whereas as a rule half or three quarters of angina pectoris patients have high blood pressure.

IRELAND

(FROM OUR OWN CORRESPONDENT)

RESIDENCE BAR TO MEDICAL APPOINTMENT

It was pointed out in this column on May 8th that the regulation of the Ministry of Home Affairs of Northern Ireland rendering residence in the United Kingdom for five years a necessary qualification for appointment as a dispensary medical officer might result in the exclusion of a citizen of Northern Ireland who had obtained his medical education elsewhere than in Northern Ireland or Great Britain. This has now happened. Last month the Omagh board of guardians by a considerable majority appointed Dr Creivail G. Patton as medical officer of the Omagh No. 2 dispensary district the appointment being subject to the approval of the Minister for Home Affairs. Dr Patton is a native of Northern Ireland who received his medical education at the University of Dublin and as a consequence has been resident in Dublin for the past five years. The Minister has refused to approve the appointment on the ground that by the regulation of 1935 Dr Patton has been compelled to proceed to a fresh election. The several qualifying bodies in the Irish Free State have it is stated drawn the attention of the Northern Government to the unfair discriminations imposed by the regulation against their graduates and licentiates and pointed out that the degrees and licences granted in the Irish Free State are entitled to registration in the General Register and are recognized by the authorities of the various branches of His Majesty's Service—the Royal Navy, the Army, the Royal Air Force and the Colonial Service. It may be added

that many natives of Northern Ireland educated therein occupy important positions in the public medical and other services in the Irish Free State and as candidates for public appointments in the Irish Free State natives of Northern Ireland compete on equal terms with their southern colleagues.

THE LANCET 100 YEARS AGO

May 27th 1837 p 345

From a communication entitled—

GENERAL REGISTER.

WE the undersigned President of the Royal College of Physicians, President of the Royal College of Surgeons, and Master of the Worshipful Society of Apothecaries having authority from the several bodies whom we represent, do resolve to fulfil the intentions of the Legislature in procuring a better registration of the causes of death being convinced that such an improved registration cannot fail to lead to a more accurate statistical account of the prevalence of particular diseases from time to time.

We pledge ourselves, therefore to give in every instance which may fall under our care an authentic name of the fatal disease.

And we entreat all authorized practitioners throughout the country to follow our example and adopt the same practice and so assist in establishing a better registration in future throughout England; for which purpose we invite them to attend to the subjoined explanatory statement in which they will set forth the provisions of the recent statute and the means whereby the important object we have recommended may most effectually be attained.

HENRY HALFORD
President of the Royal College of Physicians
ASTLEY COOPER,
President of the Royal College of Surgeons
J. HIGGSON
Master of the Society of Apothecaries

From an explanatory statement which follows the letter

It is also desirable that such statement should exhibit the popular or common name of the disease in preference to such as is known only to medical men; whenever the popular name will denote the cause of death with sufficient precision.

From a leading article (p 340)

The advice here given is, in our opinion, calculated to detract very extensively from the value of the remarks by which it is preceded. If medical practitioners fall into the loose habit of recording the vulgar names of diseases to the exclusion of their correct scientific appellations in accordance with nosological nomenclature, we shall only obtain from the Registrars a heap of rubbish which cannot be rendered available for any single useful object. Besides it should be borne in mind that the vulgar name of a disease which is of frequent occurrence in one country is unknown to the inhabitants of an adjoining county and terms which are perfectly well understood by inhabitants of the north of England are unknown to the population of the south and the west. Again in the same county when the body wastes or lingers under the operation of some internal chronic malady whether it be of the heart, the lungs, the stomach, the liver or the mesenteric glands the disease when mentioned is generally included under the single designation of "consumption" or "decline." What therefore we would earnestly recommend is this—that the scientific name should never be omitted when the nature of the disease is actually ascertained and that in addition in all cases when the complaint is known by an unlearned appellation the vulgar name should be added to the scientific term. Unless the President of the College give a further notice on this subject containing an additional recommendation, of the tendency which we have here intimated we anticipate that the paper which they have put forth will be productive of very serious and almost irreparable disadvantages.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

BY A MEDICAL ECONOMIST

IV

Most of us have heard economics described as "the dismal science." This is certainly a mistake. Economics, to day, is the most exciting science in the world.

Excitement and science, one has been warned often enough, make bad bedfellows. I do not believe it. The gentleman who sprang out of his bath shouting that he had "found it" was certainly excited and so was Pasteur when he hugged the porter in the university quadrangle and imparted to that astonished man the news that he knew at last why tartaric acid crystals might be either dextro or levo rotatory. Ronald Ross, again, was so excited when he found the malarial parasite in the body of a female anopheline mosquito that he sat down and wrote a poem in celebration of the event, and the late James Mackenzie assured me that he experienced a similar feeling when he obtained his first tracings of the auricular wave in the jugular pulse.

These men were excited because, in Mackenzie's phrase, they "knew that they were getting at the truth." Truth must be exciting since, in immemorial promise, "the truth shall make you free." Did not Bunyan's pilgrim shout and dance when the burden rolled from his back? As G. K. Chesterton said on one occasion, England used to be full of the songs and shoutings of happy folk who could not work without rejoicing nor meet one another without making a feast of it. Shouting and singing are heard no longer in English workshops.

Excitement remains, though, in the laboratories where work that is really considerable is being done. And excitement would be spreading from the laboratories to the workshops and factories and the homes of the people if only we knew how to make use of all the good things which science has bestowed, without at the same time snatching work, and the livelihood which depends upon work, from men and women. "Science," laments the good fellow in the street, "has failed. Science can give us only unemployment or poison gas."

It is a monstrous libel, but who shall blame the good fellow? If you invent a method of doing some thing which can be used by one man instead of by the twenty men now employed on the job, you are taking the bread, surely, out of the mouths of nineteen families. That stands to reason and arithmetic. Again if you go on doing that sort of thing often enough there will be trouble, national and international. Poison gas is likely to be wanted.

In other words science is a curse—the greatest man has ever known. Back to the plough, the spade, the bare hands of naked savages grubbing for roots in virgin forests. Away with steam, petrol, electricity, antiseptics, vaccination, inoculation, antitoxins—all the apparatus of modern civilisation and modern medicine. What? Would you preserve life in order that the ranks of the desperate may be swelled? Every child is potential cannon fodder, industrial or military. A baby lost is a living saved.

What balderdash it all is—and what blasphemy into the bargain. Can any science which is probing

this mystery—or rather this black magic—be called dismal while a chance remains that the truth may be found? "The truth shall make you free."

It is all a question of money and not one man in a thousand knows anything about money. Indeed for every person who thinks that money is important in this respect there are ten thousand who think that the real enemy is land or "capital." Land can be seen and capital can be counted. "Would you dispossess the landlords or take my money away from me? Bolshevik!"

* * *

The point about land, of course, is that it can be turned into a monopoly. They grasped this fact clearly and steadily in the Middle Ages and invented a system whereby nobody could acquire an absolute title to land. Kings, not Bolsheviks, instituted this system. It was called the feudal system. From the beginning, noblemen detested it and fought against it, so that they might acquire their land in full possession and thus become monopolists not only of broad acres but also of the folk living upon them. The noblemen of England scored their first great victory over the kings at Runnymede and we therefore celebrate Magna Charta as the foundation stone of our liberty. A second and greater victory was secured when the head of Charles Stuart fell in Whitehall and perpetual alliance of landowner and money lender was sworn over the dismembered body. Charles had refused to borrow from the City of London, he had dared to try to obtain money from the landowners and thus had challenged their absolute titles. It was the feudal system which he had been trying to re-introduce, thank God he did not succeed, for otherwise Englishmen would have not have enjoyed the loss of their common lands nor those great measures of liberation which snatched their acres from the small farmers and transmuted the whole of the yeomen of this land into hired labourers condemned, in the hungry forties, to eat black bread and die of vitamin D starvation.

The destruction of the feudal system was the essential prerequisite of the introduction of the monetary system which is called to day "the credit system." It will surprise many people to learn how this system was discovered.

* * *

There was a man who, long ago, kept a strong room where, for a small fee, you might deposit your gold and silver. He gave you a receipt for the money you entrusted to him. And you, being a child of Adam and lazy, never went back for your gold or silver. These paper receipts, these IOUs, were so much more convenient.

The man who kept the strong room duly noted this fact. Legend says that he was married and that his wife had a quick wit. At any rate, she is reputed to have called her husband's attention to the fact that his receipts were circulating in the town just as if they had been minted coin. The lady drew the correct inferences and gave ear to the serpent. She is reputed thus to have addressed her lord. "They are using your receipts instead of money. They come here for real money only when they are going

on journeys out of the town because in other towns your name is not known. Do you realise that if a man has deposited £100 here he will draw out only about £10 in any year? The lady's husband had realised that quite well. He had observed that about 90 per cent of his stock of gold and silver remained year after year idle upon his shelves. The lady continued. You can therefore issue and lend receipts for ten times the quantity of gold and silver in your keeping without danger of being found out. And it was so. But note that from now onwards the keeper of the strong room was never solvent. Nine tenths of his receipts in fact were receipts for nothing. Day and night the dread lay upon him that all his customers might appear in a body at the same moment to demand their real money. It follows that he did not dare to go into the market himself and buy anything with his receipts. Suppose he had bought a house for £1000. One thousand pounds worth of receipts would now have been in the hands of the buyer who might conceivably present them and ask for his money. Suppose further that on that evil day the value of the house had fallen to £500. It would not be possible in such an emergency to sell the house and so recover from the open market enough minted coin to satisfy the demand.

Now there must be no buying only lending. Then when the borrower brought his house as security for the loan (of receipts for nothing) one could say:

This house is worth £1000. I will lend you £500 so that if prices should fall I shall still be amply covered. But one thing the keeper of the strong room might safely buy outright since its price was fixed and could not change—namely gold. He proceeded to do so and soon he and his friends had bought all the gold in the world with nothing more substantial than their signatures upon receipts for nothing. Gold was money—the only money. They had made a corner in gold. They had secured a monopoly of money. Nothing has ever been bought so cheaply since the world began.

Now the whole world must come and borrow from them seeing that there was no other source of money. The world would be told that security must be given against every loan. Land in absolute title is the best security. The keeper of the strong room and his friends acquired most of the land—also for nothing. The monopoly of money had bestowed monopoly of land and so of all that grows upon or is dug out of the land and of all that is builded upon it. Real stagnation in the face of this terrific fact—for fact it is.

The immense benefits accruing to all of us through the destruction of the feudal system and the ruin

of the kings who were its guarantors can now be understood. Had the feudal system continued land could not have been pledged as security for debt and consequently the monopoly of money must have remained more or less insecure owing to the strength which the feudal system gave to kings and peoples. (There incidentally is the explanation of the fact that the Middle Ages left no debt but many beautiful buildings including the guildhalls and cathedrals whereas our age is likely to leave £8 000 000 000 of debt and much fewer beautiful buildings.) The money lenders had helped the noblemen to destroy the kings so that the noblemen might be free to pledge their land to the money lenders.

When the nineteenth century began all money was a debt to the keepers of the strong rooms who preferred now to be known as bankers. In other words all money consisted of their receipts. You could cash any given receipt for minted gold but had you tried to cash all the receipts on the same day—the thing happened on several occasions. The government always came to the rescue with a moratorium.

Now it is obvious that if all money is debt repayment of all debt would be equivalent to the disappearance of all money. Debt is constantly being repaid to the lenders; it is necessary therefore to secure a constant stream of fresh borrowers—if the truth is not to be made manifest. Men borrow when prices are rising and they hope to make a profit; they borrow also when prices have fallen and they have made a loss. Consequently the system requires an unending succession of booms and slumps. It requires further a solid mass of poverty seeing that people who are well off do not make use of the instalment system and other forms of borrowing. It is the booms and slumps which sterilise all the efforts of science to produce a better world. With a slump in sight the manufacturer will avail himself of every kind of labour saving device—in order to save labour.

But the system has its Achilles heel. If prices or rather the level or average of prices could be held stable borrowing would necessarily cease and the system would come to an end. Thanks to the study of economics undertaken by the President of the United States that is exactly what is now happening. The American level of prices and with it all the other price levels of the world is in process of being stabilised. What is going to happen? Will there ever be another slump?

At least we can say with full assurance that the dismal science is at this moment by far the most exciting science in the world.

PANEL AND CONTRACT PRACTICE

Prescribing for Hospital Patients

THE Somerset insurance committee have been exercised at having to surcharge two insurance practitioners in respect of surgical appliances supplied to patients before leaving hospital. A medical member protesting against the surcharges said that in one case a patient suffering from a disease of the spine underwent an operation in hospital and when treatment there was finished the patient could not be moved without a proper spinal support which was supplied on the instructions of her insurance practitioner. In the second case it was thought that a man's back was broken and the surgeon said that he must have a support before being moved out of the hospital.

At first sight it would appear to be illegal that a patient who can manage to get home can be supplied with a spinal jacket on the order of his insurance practitioner provided it is required for treatment of a fracture of location or disease of the spine while a fellow sufferer who cannot be removed from hospital without the appliance may not be so supplied. But it must be remembered that insurance practitioners are not responsible for the treatment of insured persons in hospitals or similar institutions where they are not open to medical practitioners generally for the treatment of their patient and in fact they exercise no control over the treatment of their patient in hospital. This applies especially in surgical cases where treatment hardly falls within the definition of surgery other than those involving the application of plaster

skill and experience of a degree or kind which general practitioners as a class cannot reasonably be expected to possess. The principle affecting these spinal jackets is surely the same as that applying to drugs, it would not be seriously contended that an insurance practitioner should prescribe drugs for his insured patients in hospital.

In 1931 the I.A.C. issued a statement as an interpretation of the position of hospitals in the matter of treatment of insured persons, with particular reference to the supply of drugs and appliances to such persons. The following extract puts the position succinctly—

If a hospital has a restricted medical staff no insured person is entitled to any treatment at the hospital *qua* insured person, nor is any member of such staff, who is also an insurance practitioner, entitled to treat at the hospital any patient *qua* insured person. It follows, therefore, that the occasion never arises when such a hospital is called upon to dispense, nor any insurance practitioner upon the staff entitled to prescribe *qua* member of the staff of the hospital, medicines or appliances at the cost of the national health insurance funds.

The insurance committee decided to refer the matter to the National Association of Insurance Committees.

Cremation Certificates

An insurance practitioner issued an ordinary death certificate without charge and was then asked for the special certificate required before cremation could take place, for which he rendered an account for a guinea. The relatives raised the question of payment with the local insurance committee, and an inquiry was addressed by them to the Ministry of Health as to whether it was open to the practitioner to submit an account for a certificate required purely in connexion with the cremation. Rule I of the medical certification rules is quite explicit, certificates are required to be given only if they are necessary for the purposes of national health insurance, and the department gave the obvious answer that there is nothing in the rules to preclude a practitioner from claiming a fee for giving a medical certificate in the circumstances indicated.

PARLIAMENTARY INTELLIGENCE

THE FACTORIES BILL IN COMMITTEE

The Factories Bill was further considered by a Standing Committee of the House of Commons on May 5th.

Examining Surgeons

On Clause 119 (Appointment and duties of examining surgeons),

Major NEVEN-SPENCE moved to leave out the proviso that the Secretary of State might authorise a medical practitioner who was employed by the occupier of the factory in connexion with the medical supervision of persons employed in the factory, but was not otherwise interested in the factory, to act as examining surgeon for that factory for such purposes as the Secretary of State might direct. He said the more he looked at that provision the less he liked it. Factory examining surgeons were specialists in regard to knowledge, experience, and qualifications and were, or ought to be, whole-time men at the job. A medical practitioner in charge of welfare work in a factory had not necessarily any of the qualifications which he should have as an examining surgeon. If under Clause 87 (which deals with the duty of an examining surgeon to investigate and report in certain cases) the Home Secretary required an investigation and report in the case of death or injury due to exposure to fumes, or in the case of any disease, that duty should not be carried out by someone who was a paid employee of the occupier of the factory.

Mr WHITE said he hoped the Under-Secretary would give favourable consideration to this amendment. A great deal of anxiety had been felt in some quarters because it seemed to introduce an undesirable principle in doing something which might tend to put the medical practitioner employed in a factory in an undesirable position. Nobody held the medical profession in higher esteem than he (Mr White) did, but people should not be placed in a statutory position where their public duty might conflict with their private interests. Under this clause they might have the position where a man in receipt of a salary of £1000 a year from the occupier of a factory could be appointed, but another who held five shares at a shilling each in that factory would be disqualified from serving. If the Under-Secretary was unable to accept this amendment perhaps he would give special permission for the surgeon employed by the factory to report for certain extra duties.

EMPLOYMENT IN TWO CAPACITIES

Sir J. HASLAM said he hoped that the amendment would not be accepted. He had had experience of factories in which a very high standard had been

developed in regard to the after-care of young people who worked in mills where there was a complete system of medical inspection, nurses, and rest-rooms. In their discretion the owners asked the certifying surgeon to act as their medical adviser in this matter, and who could do it better? The ordinary family doctor had to know something about everything, but the factory inspector became a specialist in his own business in knowing the law, understanding adolescence, and so on. It was a very wise move indeed for those progressive firms who had rationalised their business and set an example to the whole of the country in looking after the health and welfare of their workers, to call in the factory surgeon as their medical adviser not only in regard to certifying but in every other respect of their line. It was a slur on these medical men that they should be excluded by statute from occupying this position and the Home Office would be ill-advised to exclude them from carrying on welfare work in the factories in addition to their ordinary certifying business.

Mr RHYNS DAVIES said that he had come in close contact with this problem, because the factory surgeons had come to see him personally, so that he had heard the case put both ways. He had decided definitely in favour of the deletion of this proviso. Take the case of a young man direct from a university, having passed his examinations as a doctor, who was now employed full time by an industrial firm, and after a year or so applied to become an examining surgeon under the Home Office. In his (Mr Davies's) view it was against public policy, and certainly incongruous, that such a medical gentleman, employed full time and receiving a salary from his employer, should be asked to do a public duty in respect of his own employment. Municipal authorities had decided that once a man was appointed as a full time medical officer he should not do private medical practitioner's work. He did not wish to say anything in criticism of the doctors, who were doing a very noble service, but it was contrary to human nature to expect them to do a public service on the one hand and to do their job for their employers at the same time.

Mr LLOYD, Under-Secretary, Home Office, said it was not easy to make up one's mind on this point. When he first saw this proviso his attitude was that of Mr Rhys Davies, and he was inclined to take the view that it was not right to put any man in a position in which there might be a conflict of duties or interests. Since then, however, he had heard the other side of the question and he was bound to say that it had impressed him. He would remind the Committee that this was only an authorisation to enable the Home Secretary to allow this procedure in certain

cases and for certain purposes and therefore it could be closely controlled by the Home Office. Most of these factory doctors were very keen on their job. It was in relatively progressive industries that the employers had been sufficiently public spirited to go to the trouble and expense of having a special doctor for this purpose. That was a development which the Home Office would like to encourage. It would seem that it was not necessarily right always to forbid definitely a works doctor who knew so much about the conditions in the factory from performing some of this work under the Factories Bill, such as for instance the certification of the fitness of young persons. Other people might take a different view but he thought that under the safeguards provided in the Bill the Home Secretary might have power to authorise this. He agreed that if it were authorised improperly it might be liable to abuse but on balance he thought it was wise to retain this proviso in the Bill.

Mr RHYSDAVIES asked what was the process whereby an examining surgeon might be removed from the list if it was found that in the public interest he should not continue with his work.—Mr LLOYD: I am taking a little advice on that matter.

POSSIBLE CONFLICT OF INTERESTS

Mr SILVERMAN said an examining surgeon was called upon to act in a quasi-judicial capacity and to do things in which there might be a conflict of interests not between the doctor and the public but between the employer and the employee. Under Subsection (4) of the clause under discussion it was provided that the examining surgeon of any factory should have power at all reasonable times to inspect the general register of the factory. In Subsection (6) of the clause it was provided that an examining surgeon should if so directed by the Secretary of State make special inquiry and examination of employed persons as might be directed. Frequently a special inquiry would be required when there was a suggestion that something improper had occurred or where there had been a breach of the regulations. In such a case a doctor who was an employee of the factory would take part in something of the nature of a judicial inquiry. Subsection (9) of the clause stated:—

References in the Workmen's Compensation Act 1926 to a certifying surgeon shall all be construed as references to an examining surgeon appointed under this section and references to the certifying surgeon for the district in which the workman is employed shall in a case where a workman is employed in a district for which no examining surgeon is appointed be construed as references to the medical practitioner (if any) appointed by the Secretary of State to have the powers and duties of a certifying surgeon under Part II of the Workmen's Compensation Act, 1926.

There the duties were almost absolutely judicial. There were many cases of industrial disease where it was the business of the certifying surgeon to certify what disease had been contracted and whether it had arisen out of the employment. In many cases the certifying surgeon's certificate was conclusive or almost conclusive as to the right to workmen's compensation. If a certifying surgeon was given powers to decide people's rights as between employer and employee it was not proper that he should be a person employed by the employer against whom the rights were being determined. It was not suggesting, that doctors in that position would act improperly, but the policy of the law had always been not to place in positions of judicial office or quasi-judicial office persons who were in any way bound to either side in the matter which was being litigated. He did not say that the Secretary of State would often appoint persons where Subsection (9) would have to be operated but surely it was much safer on the whole not to have this proviso in the Bill at all.

Mr SMITH said that he found as many members of the Committee did some difficulty in reconciling

this proviso with the provisions of Clause 87 of the Bill. He suggested that the Home Secretary might insert some words by which while it would be possible for a paid medical officer of a particular factory to be an examining surgeon, he would not be permitted to investigate the cause of death or of some disease reported by the Inspector which occurred in his own factory but some other examining surgeon would be called in to do that class of work.

A HOME OFFICE AMENDMENT

Sir JOHN SIMON, Home Secretary, said he rather liked that suggestion. There were undoubtedly cases in which according to general notions of what was fair and right it would not be proper for the medical officer of a factory to act as between possibly contending parties. On the other hand as a matter of common sense and progressive administration it would be a pity if a factory medical officer appointed by a progressive factory owner to look after his work people's health were debarred from certifying who was fit and who was not fit because that work depended on a man's knowledge of the people and their work. He (Sir J. Simon) would be prepared to amend the proviso so that it would run something like this: "Provided the Secretary of State may authorise a medical practitioner to act as examining surgeon for that factory and instead of saying 'for such purposes as the Secretary of State may direct' it might be sufficient to say: 'for the purpose of examining and certifying the fitness of young persons'."

Mr WHITE: There is also the matter of certificates of employment.—Sir J. SIMON: Yes; it arises under Clause 92. Continuing the right hon. gentleman said that if he might put the words he had suggested into the Bill provisionally he was willing to do so.

Major NEVEN SPENCE withdrew his amendment and moved an amendment in the form suggested by Sir J. Simon which was agreed to.

Mr RHYSDAVIES moved an amendment providing that subject to the consent of the employed person concerned the examining surgeon should have the right to inspect the medical records of the medical practitioner employed by the occupier of the factory.—Mr LLOYD said the Home Office would like to go into this matter further and see whether the proposed amendment was desirable.

The amendment was withdrawn.

THE QUESTION OF SCHOOL MEDICAL DOSEMIERS

Mr ELLIS SMITH said that there had been gradually growing up an ideal system of medical supervision of school-children up to 16 and 16 years of age. The medical men and women who were administering the Education Acts had scientific knowledge of the development of the children, kept records of their health and capabilities in the classes and were in constant touch with the children themselves. Up to the age of 16 the future of young people was very uncertain. In these times of repetition work in large factories it was common for young people to be discharged at 16 or 17 years of age and the progressive education authorities were of the opinion that the medical officers who administered the Education Acts ought to have jurisdiction also over the children until they reached the age of 16. He understood that the medical officers were already responsible for children up to 16 so far as the elementary schools were concerned and in the case of the secondary schools they were responsible for them until the age of 16. He asked the Home Secretary before the Report stage of this Bill to reconsider the whole of this clause in order that this gradually developing scientific method of handling children up to the age of 16 might be continued until they were 18.

Mr LLOYD said of course the view of education is on a matter of this kind and it was not strictly within their purview, were not the final word; there was another side. There were also the points of view of the industrialists and the doctors to be taken into account and they were not quite the same thing.

Everyone knew that doctors attached great importance to a proper medical history of a case, and they were really at a loss if they had not got it. If it were necessary to change the provisions of the Bill in order to make sure that these medical histories would be available, and if they could not be made available in any other way, the case would be very strong, but even then there would be considerable objections. He believed that quite a large number of school-children—many more than one was inclined to think at first sight, indeed he had heard it estimated at 50 per cent, though that could not be true in all cases—went to work in areas different from those in which they had grown up as school-children and that would make the working of this scheme, if it was still to be based on the educational medical system, rather difficult. In any case, however, he thought they must realise that these medical histories could be made available. There were elaborate provisions in Subsection (9) of Clause 92 for making available those medical histories which were really important. Therefore he did not think that the case was so strong as was suggested, and he did not think

that they ought to take the view that the doctors under the education system were more likely to do the work better than the examining surgeons were doing it to-day. They were practical doctors who had had considerable experience of industry, and he thought that the Committee would be ill advised to make such a change as had been suggested.

The clause was ordered to stand part of the Bill.

FEES OF EXAMINING SURGEONS

On Clause 120, Mr. VIANT moved to provide that the Home Office should be charged with the expenditure in connexion with this part of the Act.—Mr. LLOYD said he thought it was a reasonable view to take that these medical examinations were on a similar basis to the other precautionary measures which occupiers were required to take, and of which they had to bear the expense and he saw no reason why they should be relieved of this particular expense. The amendment was withdrawn and the clause was ordered to stand part of the Bill.

The Committee adjourned until May 25th.

CORRESPONDENCE

OBSTETRICS IN GENERAL PRACTICE

To the Editor of THE LANCET

SIR,—I am in agreement with your leading article of May 8th that the proposals contained in the recent report by the Ministry of Health on maternal mortality and morbidity are revolutionary. You leave one doubting, however, whether you approve or disapprove of the revolution. On balance, I conclude that you approve, as I do. For many years I have advocated the recommendations contained in the report. To put it very simply, operative obstetrics should be placed on a plane with surgery and the surgical specialties—only experts should deal with it. By experts I include not only pure obstetric specialists but those general practitioners who, by post graduate training and the interest they take in obstetrics, have qualified to practise this special branch of medicine and surgery.

My criticism of the report is that it does not define and detail how the obstetric service is to be organised. I did so in 1931 and included my scheme in "Maternal Mortality and Morbidity: a Study of their Problems" published by E. and S. Livingstone in 1933.

We are now going to have expert municipal midwives. Their work should be directly associated with the antenatal clinics of local authorities, this would give those centres very definite supervision of their work and lessen the number of "inspectors," or "supervisors" as the Minister of Health prefers to designate them, necessary for the service.

The medical staff of the antenatal clinics should be well trained and experienced obstetricians and they should act as consultants to the municipal midwives when they require advice or assistance. Further, the obstetricians of the antenatal clinics should be on the staff of the local maternity hospitals and act as assistants to the medical director or directors of the hospitals. At present in many antenatal clinics of local authorities the medical staffing is unsatisfactory, because the individuals doing the work are engaged only in the antenatal care of pregnant women—they have nothing to do with the supervision of women in parturition or during the puerperium.

In many large cities, and certainly in all in which there is a teaching school, pure obstetric specialists are to hand. In some these would have to be intro-

duced, as has been done in a few instances. In small cities and towns specially well trained family practitioners should be enlisted into the service. It is unfortunate in some respects that obstetrics is common with so many other departments of medicine has to be removed from the province of the family practitioner. But as you point out "occasional obstetrics is even more dangerous than occasional motoring", possibly "may be" should be substituted for "is".

One word more. I think it would be preferable if in the further developments of the service construction were made from the centre or the institution rather than the periphery. It is impossible to predict to what extent institutional treatment may extend. As a simple example—a number of us think that all primigravidae should receive institutional treatment in their first confinement.

I am, Sir, yours faithfully,

Canterbury May 13th

J. M. MUNRO KERR.

MEDICAL PEACE CAMPAIGN

To the Editor of THE LANCET

SIR,—The death early in April of Dr Cecile Booyesen, the secretary of the Medical Peace Campaign, has been a great loss to her colleagues. It was chiefly through her inspiration and energy that the work of such a campaign was conceived and initiated. As we, who were closely associated with her, interpret her thought, it was that our profession has a duty to strive for the prevention of all human suffering and pain by penetrating to their causes and removing them. If war came to be outside the medical purview, one of the main sources of such suffering would be eliminated. A calm, scientific approach is needed and the profession as a whole should be urged constantly to debate the problems associated with war and its causation much as it debates the aetiology and prevention of disease.

It is in this spirit that her work will be carried forward. We do not anticipate spectacular results, for the point of view will require discussion among our colleagues before it is likely to receive full acceptance. But primarily it is this discussion that we wish to initiate and foster.

An account of the activities of the Campaign up to date will be found in the three bulletins that have so far been issued, but we feel that our activities

are only beginning. We hope soon to issue a short book on the causes and characteristics of war as considered from a strictly medical point of view. Suggestions on possible research will be welcome as will any other proposals for furthering the objects of the Campaign.

Finally we express our hope that all members of our profession who are convinced of the urgency of action will place themselves in some relation with the existing Peace organisations such as the Peace Councils and the branches of the League of Nations Union.

On behalf of the Committee of the Medical Peace Campaign I am Sir yours faithfully

May 19th

JOHN A RYLE

THE METHYLATED SPIRITS (SCOTLAND) BILL

To the Editor of THE LANCET

SIR,—It must be assumed that the taste for that noisome fluid methylated spirit is sufficiently prevalent north of the Tweed to require an Act of Parliament to check its indulgence otherwise it is inconceivable that the Methylated Spirits (Scotland) Bill which is down for second reading in the House of Lords on June 1st should have passed through all its stages in the Commons. Is this crank legislation or is it not? The Bill as introduced into the House of Commons sought to control the sale in Scotland of methylated spirits by requiring that all purchasers of it should sign an entry in a book kept by the vendor for the special purpose of tracing the buyer who purchases the spirit in quantities less than four gallons. In other words a Scotoman might still buy 32 pints without disclosing his identity but if his requirements were for the modest quantity of say half a pint, whether to take the spots off his Sunday clothes or to boil water to add to a piece of lemon and something really worth while, he would unless he signed the book make the man who sold him the spirit guilty of an offence and liable on summary conviction to a fine not exceeding ten pounds or to imprisonment for a period not exceeding sixty days. For some reason or other surgical spirit was co-partnered with the other evil spirit in the course of the passage of the Bill through the Commons. Should this measure eventually receive the King's sanction all persons in Scotland who are ordered by their medical advisers to procure a supply of surgical spirit so that the patient in the house may be treated for bed-sores will have to go about the purchase of it in much the same way as they have to follow if they wish to purchase a deadly poison. This is not a Bill which should be hurried through Parliament. Its motive is good but the aim should be to stop the four gallon beano to introduce a very vulgar word rather than to place the slightest hindrance in the way of invalids suffering from bed-sores.

I am Sir yours faithfully

London May 19th

I C GOODALL

PRURITUS ANI

To the Editor of THE LANCET

SIR,—In your issue of May 8th Dr J T Ingram attacks my views on pruritus and in no uncertain manner and I will concede at once that I would have been wiser to leave out the word destructive in mentioning the possible effect of X rays on the vessels. His other thrusts are more easily parried.

He denies that itching is more apt to occur at body orifices than elsewhere but in my public gathering it is commoner to see people scratching

or rubbing the eyes, nares, corners of the mouth and ears than other part not excepting the healthy scalp. In children in whom social inhibition is not yet developed the same applies to the vulva and anus; and the first symptom of acute urethritis is frequently irritation at the meatus. This matter however was merely referred to in an introductory manner. I do not think the term prepruntio stage merits his sarcasm as it is merely another way of saying that the threshold to irritation is lowered and the variability of thresholds is an accepted physiological fact. I am well aware as I indicated in my article that the oedema is generally regarded as due to scratching and rubbing; but it does not follow that this view is correct. In fact I think it has been the greatest stumbling block to a proper conception of the disease. Dr Ingram states that oedema of the skin is readily provoked in the skin of the genitalia but in many cases of severe scabies in soldiers involving the scrotum and penis and exhibiting numerous scratch marks in that area I never saw any lesion even remotely resembling that of pruritus ani.

The constructive part of his letter is not quite clear to me but I may be allowed to refer to it. He says the indulgence in the pleasure of anal itching often creates the habit which is so difficult to break. Does he mean that the patient creates itching by auto suggestion and that the sensation arises in the sensorium? As scratching is used to relieve itching why does the patient scratch to get rid of a sensation which he likes? Why is pruritus ani a disease of middle age though habits are most easily acquired in childhood and youth? Dr Ingram complains that I dismiss the psychological side of the problem but psychology though a good servant is a bad master.

Major Porter in your last issue is I think unwise in the generalisation that pruritus ani is due to abnormal anal papillae. Papillae which are enlarged, inflamed or partially detached are often seen in the absence of pruritus, but they overlie veins passing down to the external haemorrhoidal area and these veins can hardly fail to be damaged when the papillae are cauterised. I am Sir yours faithfully

J W RIDDOCH

Edgbaston Birmingham May 17th

INSULIN SHOCK TREATMENT OF SCHIZOPHRENIA

To the Editor of THE LANCET

SIR,—Before subjecting patients suffering from schizophrenia to the train of events incidental to the depletion of glucose from the body fluids and tissues (referred to as hypoglycaemic shock) it is to be presumed that consideration will be given to the possibility that such a train of events may be due to colloidal precipitation. Having in view the cellular pathology of true schizophrenia the adoption of such a procedure would appear to entail especially serious risks. I am Sir yours faithfully

Stafford May 16th.

B H SHAW

To the Editor of THE LANCET

SIR,—I read Dr Fossell's letter in your last issue and having recently had the advantage of studying the latest modification of this treatment at Vienna and Minsingen I think it may serve a useful purpose to record the methods now adopted by these experienced workers in assessing the various depths of coma which we follow in our treatment at the hospital in Vienna and Minsingen the degrees of unconsciousness during hypoglycaemia are expressed as

light coma, deep coma, and very deep coma. The onset of "light coma" is noted as soon as the patient is unable to respond to external stimuli, such as calling his name or touching his body. He may be quiet or restless. His reflexes are present. The onset of "deep coma" is carefully noted and is characterised by loss of the corneal reflex. A sign I have seen frequently used is gentle blowing on the eyelids, in "deep coma" there is no finching. "Deep coma" is considered essential in treating excited and paranoid schizophrenics. It is never allowed to exceed one to one and a half hours. The patient is in a "very deep coma" when the pupils do not react to light. As long as the pulse and respirations are satisfactory this condition may be allowed to last for a short time, but the doctor keeps close to the patient and ready to interrupt the hypoglycæmia.

From personal experience in this hospital I find that frequent examinations of the conjunctival reflex delay the onset of deep coma and therefore I consider the absence of response to gentle blowing on the eyelids as a useful guide. When deep coma has lasted for several minutes a more thorough examination can be made with less likelihood of the patient returning into light coma (release of adrenaline).

I am, Sir, yours faithfully,

L A FINIEFS

Three Counties Hospital, Arlesey, Beds May 18th

A DISPUTED WILL

To the Editor of THE LANCET

SIR,—In THE LANCET of July 2nd, 1904, you were kind enough to publish an address I had recently delivered before the Hunterian Society on the subject of perforating typhoid ulcer. In it I drew attention to the fact that between the first symptoms of perforation and those indicative of the consequent fatal peritonitis, a remission of symptoms may occur to such an extent that the diagnosis of perforation may be abandoned, and I illustrated my remarks with details of cases. One of these is very pertinent to the case referred to in your last issue, for the patient, a man of 56, actually within a few hours of his death gave certain directions as to the disposition of his property. He was quite *compos mentis*, and I should have been prepared to testify that he had been so in any court of law had it been necessary, as I was present at the time.

I am, Sir, yours faithfully,

C W GOODALL

Hemingford Abbots Hunts May 16th

SPAIN OR INDIA ?

To the Editor of THE LANCET

SIR,—A letter in your issue of March 13th, under the heading *A Spanish Ambulance*, reminds me again of that peculiar characteristic of the British people which impels them to lavish their time, energy, money, and even their life blood for the relief of the foreigner in distress, whilst they will turn a completely blind eye on the needs of their fellow countrymen. Let a war break out, or some major national disaster occur in Spain or Abyssinia, or indeed in any country other than one belonging to the British Commonwealth, and at once appeals appear over distinguished names calling for money, doctors, nurses, and all the paraphernalia for equipping and dispatching medical units to the distressed area, and such appeals, apparently, meet a ready response.

Does it ever occur, I wonder, to those who promote and respond so generously to these appeals that there is surely room for their philanthropic efforts in our vast

Empire, and indeed even in our own small island? Do they realise, for example, that here, in India, there are vast areas where sickness, disease, and starvation are rife and where perhaps the only person to whom the people can look for the relief of their distress—if indeed there is anyone at all—is one underpaid and overworked missionary doctor?

I am not a missionary doctor, I hold no particular brief for missions, nor is this letter an appeal in aid of the medical missions, it is merely intended to indicate one channel into which I consider the charity of my fellow countrymen might more profitably be directed. However much one may feel for the unfortunate victims of the Spanish civil war, I think we should remember where charity ought to begin, and I personally would not give one farthing to aid a distressed Spaniard or Abyssinian so long as one fellow member of our Empire is in need of assistance and it is within my power to help him.

I am, Sir, yours faithfully,

Assam, India, April 20th

CIVANEO.

EXPLANATION AND APOLOGY

To the Editor of THE LANCET

SIR,—In the booklet recently issued by our firm in connexion with a block of flats in Dolphin square the name of Mr Hope Carlton, F.R.C.S., was mentioned as being a doctor in residence there and available in emergency. We regret to say that Mr Hope Carlton's name was inserted in this booklet without any authority from him, without his authority being sought, and without his knowledge, and we desire to express to him our sincere apology for the unauthorised use of his name and any inconvenience that he may have been caused thereby. Mr Hope Carlton is not practising at or from Dolphin square, which is his private residence, but he is continuing to carry on his practice as a consulting surgeon as before.

We are, Sir, yours faithfully,

RICHARD COSTAIN LTD

Dolphin square, Grosvenor road S W May 11th

THE FRUITS OF IDLENESS

To the Editor of THE LANCET

SIR,—Last week your Scottish correspondent again mentioned plans to shorten the students' summer vacation. Far be it from me to interfere with the traditional sport of overburdening the curriculum, nevertheless I venture to hand on the opinion of a group of young London consultants whom I lately heard discussing medical education. The question arose why the new Scottish graduate is a better doctor than his English contemporary. The answer was that his long summer holiday, his life in lodgings, and his habit of frequenting places of public refreshment bring the Scottish student into closer touch with real human beings and so promote an earlier maturity of judgment. The holiday also prevents staleness in teacher and taught.

Of course the argument breaks down at the source if the Scottish University authorities do not agree that their graduates are superior.

I am, Sir, yours faithfully,

Sussex May 18th

VULPIS

MEDICAL PRAYER UNION—On May 26th at 8 A.M., in the refectory of University College, Gower street, London W.C. this society is holding its annual missionary breakfast. The speaker will be Dr Clement Chesterman. Those who wish to attend should notify Dr Tom Javis, Livingstone College, Leyton, E 10.

OBITUARY

S. A. KINNIER WILSON M.D. D.Sc. Edin
FRCP Lond

THE death of Dr S. A. Kinrier Wilson removes from neurological medicine a great figure who gained early in life an international renown which was well deserved. If his name carried even greater weight abroad than at home this is not to imply that he lacked honours here but that his command of languages, his power of lucid exposition and his forceful personality carried his fame to places where the achievements of other British neurologists had not been accorded recognition. Perhaps his reputation abroad depended on the fact that neither in thought nor in teaching could he be considered as typical of the British school. Rather he kept up the tradition of the *Salpêtrière* in the days of Pierre Marie which had been one of his earliest inspirations and no doubt he owed much also to Hughlings Jackson of whom he was an enthusiastic disciple.

Samuel Alexander was the son of the Rev James Kinrier Wilson of Co Monaghan Ireland. He was born in New Jersey U.S.A. in 1878 and educated in Edinburgh at George Watson's College and the University of which he became M.A. in 1897. Bursaries and scholarships fell early to his hand before and after he began to study medicine. He qualified M.B. in 1902 and took his B.Sc. with first-class honours in physiology in 1903 after a period as house physician in the Royal Edinburgh Infirmary. In the same year he became a Carnegie research fellow and went to work in Paris with Pierre Marie. On his return to England in 1904 Kinrier Wilson was made house physician to the National Hospital, Queen's Square and he continued to serve this hospital in various capacities for the rest of his life becoming in turn resident medical officer, registrar and pathologist before his appointment to the honorary staff as assistant physician (1913) physician to outpatients (1921) and physician to inpatients (1925). These were years not only of preparation but of achievement. After taking the M.C.P. Lond. in 1907 Wilson produced what was acclaimed as an excellent translation of a French book by Meige and Fendel on ties and their treatment and in the next year published his first contribution to the study of apraxia. From 1909 to 1911 he held a B.M.A. research scholarship and in the latter year took his M.D. with a gold medal. In 1912 he contributed to *Brain* the description which was to become a classic of a familial nervous syndrome which has come to be known throughout the world as Wilson's disease. In the same year he was made a consultant physician to the Westminster

Hospital becoming dean of the medical school in 1914 when he was elected F.R.C.P. Lond. He resigned from the Westminster in 1919 on his appointment to King's College Hospital as junior neurologist and lecturer in neurology in the medical school. He became neurologist to the hospital in 1927 and senior neurologist in 1928 on the retirement of Dr W. Aldren Turner.

During the last 20 years the esteem in which Wilson was held for research, clinical acumen and for written and oral explanations of difficult neurological conceptions grew to such an extent that his leisure hours were few and were still further curtailed when in 1920 he became editor of the newly established *Journal of Neurology and Psychopathology*. Yet it was only within the last few years that he became only an occasional instead of a regular contributor of leading articles on neurological subjects to our columns and relinquished, with evident reluctance, routine reviewing duties.

Though Wilson's name is chiefly connected with certain aspects of disorders of motility and of multiple aphasia and apraxia, narcolepsy and hysteria, which he chose as subjects for monographs or official lectures—e.g. the Croonian lectures of the R.C.P. Lond. in 1923 and the Monroian lectures of the R.C.P. Edin. in 1930—we have good reason to know that his interests were as extensive as his knowledge was wide. At short notice he could and would supply wise comment, generous appreciation, reasoned criticism in words so nicely chosen that notices from his pen were a delight to read. His spoken words—as president



DR. KINNIER WILSON

of sections of the Royal Society of Medicine at the annual meetings of the British Medical Association at congresses or at public dinners—were no less apt in allusion and stimulating in content. This gift and the fact that he was no less agreeably fluent in German or French brought him more invitations to take a prominent part in professional gatherings than he could possibly accept. He was made an honorary member of the neurological societies of almost every European country and of the American Neurological Association and his personal contacts with workers in other countries were renewed and extended at his clinics at the National Hospital which were frequented by post-graduates from every land.

His interests in recent years are clearly reflected in a book entitled *Modern Views on Narcolepsy* published in 1928 which is much more than the collection of lecture and essays it looks to be. It starts with five chapters on the epilepsies followed by one on the narcolepsies in which Wilson examines the analogies between various narcoleptic symptoms with those

usually termed epileptic. An essay on the old (striato spinal) and the new (cortico spinal) motor systems forms an excellent introduction to the survey of the disorders of motility and of muscle tone, with special reference to the corpus striatum, which formed the subject of his Croonian lectures, here reprinted. The three final chapters are on pathological laughing and crying, on dysæsthesia and their neural correlates, and on the Argyll Robertson pupil. To all the subjects dealt with in this book and to many others he had made a personal contribution which never remained an isolated observation but was woven with infinite care into the complex pattern of current neurological ideas. It is a matter for deep regret that a man with such a power of clear logical thought on intricate neurological problems should not have been able to finish the text book of neurology on which he had been engaged for the last decade. The book is nearly complete, over three quarters of the text is ready. A further eighth has been written, but he wanted to rewrite it, and there remains an eighth which existed only in the form of rough notes. His colleagues and disciples had expected this work to become a standard international text book as important to modern neurologists as was "Gowers" in the late 'nineties, and it is greatly to be hoped that they will be able to arrange for its completion. Wilson's knowledge of his subject was encyclopædic, he read widely and possessed a remarkable memory in which the enormous clinical material that passed through his hands during his many years as out-patient physician at the National Hospital, and as consultant neurologist to the Metropolitan Asylums Board, and, later, the London County Council was safely stored. He was a splendid teacher, with a flair for the unusual phrase that remains in the memory when most of the rest is forgotten, and a delightful informal talker. His lectures and demonstrations were always crowded because there was always something fresh, if not in the case or the subject at least in the manner of presentation. An assistant medical officer at the Fountain Hospital writes "Dr Kinnier Wilson's visits to this hospital for mentally defective children were a stimulus and an inspiration. His avid curiosity and his provocative speculations set us hunting for material between his visits and gave a new impulse to routine physical examinations. If we had some half formulated theory to put forward he was always eager to discuss it, drawing on his own profound experience to check and encourage our reasoning. He was a teacher in the Hippocratic tradition."

The personal side of "Sam" Wilson is not easy to convey to those who did not know him. Strangers were apt to take for hauteur what was only abstraction. He had no facile social grace, nor could the barrier round him be scaled once and for all. The approach remained difficult for all but a band of close friends who knew that he welcomed their advances even if he was unable to help them to reach and retain intimacy, and the depth of his affection was apparent when his friends were in any trouble. His interests outside his library were golf—as a left handed player—his garden at Thorpeness, and his family. He married Annie Louisa, daughter of Dr Alexander Bruce, who survives him with two sons and a daughter.

Dr Macdonald Critchley writes "A mere recital of international honours and academic distinctions does not adequately describe the place occupied in British neurology by the late Dr Kinnier Wilson. Although trained on a firm foundation of physiology,

anatomy, and pathology, Wilson was at heart essentially a clinician with a philosophical and reflective outlook. In this respect he was inspired by the friendship and precepts of his revered Hughlings Jackson, with whom as a very young man he became closely acquainted. Besides his outstanding abilities Wilson was gifted with an exceptional memory and a sure command of language. He wrote easily and clearly in a style which was individual. His writings, which covered a large range of neurological subjects, had the uncanny faculty of throwing light from an unusual angle upon the problem concerned. In this way his papers were particularly inspiring, always refreshing, and sometimes provocative. Wilson's approach to a problem invariably went beyond a simple recording of observed data—a style of publication which he dubbed as merely 'descriptive'—and he would always inquire in a reflective and thoughtful manner into the *modus operandi* of clinical phenomena. In this way all his writings were rich in speculative and stimulating matter. The monograph, published while yet a registrar at the National Hospital, which won him international fame was his well known thesis on 'progressive lenticular degeneration,' a malady which bears his name. This particular work may be regarded as the impetus to the world wide interest in the normal and morbid physiology of the basal ganglia. Wilson felt that much of the subsequent work went considerably too far into the realms of the imagination, and his Croonian lectures on 'Disorders of Motility' were written as a protest against this striatal jerry building.

"Wilson will especially be remembered by his pupils as a lecturer. He was probably one of the finest modern medical speakers, eloquent and witty in his choice of language, with a supreme ability for arousing the interest and attention of his listeners, and for stage managing his material. His clinical demonstrations at the National Hospital were attended by throngs of students from all over the world. His numerous pupils and assistants will be the poorer without his genial and stimulating inspiration. No one was more gifted than he in the ability to illuminate difficult neurological problems and his valuable time was always at the disposal of his juniors. In these days of mediocrity, Wilson stood out as a 'big man'—one who will be remembered for his bonhomie, brilliance, and kindness of heart. His keen sense of humour—rare in one so witty—will be sadly missed wherever neurologists foregather."

GEORGE EVERARD DODSON, M.R.C.S. Eng., D.T.M. and H.

WE regret to announce the death of Dr G. E. Dodson from typhus fever on May 9th at Kerman, Iran (Persia), where he had charge of the Church Missionary Society's Hospital. Born in 1872 at Higher Crumpsall, Manchester, he was educated at Giggleswick grammar school and St Bartholomew's Hospital. He qualified in 1897 and became extern midwifery assistant and assistant in the orthopaedic department at Bart's, gaining experience which he turned to good use later. After further hospital work at Norwich, Bath, Nottingham, and elsewhere, he was accepted by the Church Missionary Society for service in Persia, and with his wife, Miss E. L. Wells, a trained nurse, he left England in 1904. "During his 34 years of service under the C.M.S.," writes a colleague, "Dr Dodson did a work for Iran which will never be forgotten. He was a gifted surgeon, and laid the foundation of a social service

and welfare activities—especially at Kerman—which has been of inestimable value. Two outstanding features of his professional practice were his orthopedic work amongst the crippled carpet weavers and the skilful obstetrical and gynecological work which has saved the lives of large numbers of dwarfed cripple-mothers in that industry. No less important were the preventive and welfare services which he instituted, and which led to legislation that has gone far towards revolutionising the conditions of the

carpet industry in the cities of Iran. As a missionary he was honoured for his high sense of duty, his lovable personality and his unsparring self-sacrifice. He died, as he would have wished, among the people whom he had served and for whom he has given his life.

During the late war Dr Dodson held a captain's commission in the Royal Army Medical Corps and was surgical specialist at the Colaba War Hospital Bombay.

PUBLIC HEALTH

The Smoke of Britain

ON the whole the pollution of the atmosphere in this country has been reduced during the last twenty years. This is the conclusion reached in a report by the Department of Scientific and Industrial Research¹ which summarises measurements by 72 municipal and other bodies. Some of the figures show a small increase during the last two years—presumably because of increased industrial activity—but the outstanding feature of the curves is the large decrease in pollution at many places before the industrial depression of 1930-33 started.

The records for London show improvement between 1916 and 1922 but from then until 1936 there was little change in the total solids, an increase in the deposit of sulphates and if anything an increase in the deposit of tar. On the other hand it is considered encouraging that in the winters of 1931-35 central London enjoyed 52 per cent of the sunshine obtainable at Kew (which naturally shows a small deficiency compared with the more southerly districts) compared with 20 per cent, in 1881-85. In Edinburgh (Princes-street) the pollution is getting rather worse. Glasgow records a steady improvement from 1916 to 1923 but from then onwards there has been little change. At St Helens the total solids deposited has fallen from 612 tons per square mile in 1917-18 to 447 tons in 1935-36 but the improvement has not been continuous. The total deposit at Wakefield fell from 613 tons per square mile in 1924 to 227 tons in 1935—that is, by almost two thirds in ten years. Sulphates fell from 136 tons in 1924 to 22 tons in 1930 rising somewhat later to 24 tons in 1935. Tar decreased from 8 tons in 1924 to 6 tons in 1936.

An attempt has been made to trace the trend of affairs for suspended impurities which produce smoke haze as well as matter deposited from the air. In this respect the London stations do not all tell exactly the same story but there is again a general indication of improvement. In four out of five of the observing stations however the results for 1935-36 indicate a higher degree of pollution than 1934-35. In Glasgow there has been almost no change. The results for Cardiff which indicate a lower level of pollution than most of the others have a slight tendency to get worse.

The figures for tar in 1936 indicate an increase. One of the worst stations for tar deposits was Golden Lane, London, where the tar deposit in the gutter was at the rate of 10.41 tons per square mile an increase of 213 per cent on the general average for the last five years. The deposit of total solids which the report states may be regarded as a summary of all the others indicates that 1936 compares unfavourably as a whole with 1931-35. The greatest increase was found in London (Finsbury Park) with an annual

deposit of total solids at the rate of 40.12 ton or 178 per cent of the general average. Finsbury Park also showed a large increase in the deposit of sulphates with a figure of 311 per cent of the general average. The next greatest deposit of sulphates was at Halifax (Westview Park) with 242 per cent.

Records of the amount of sulphur gases in the atmosphere which are believed to have a considerable effect on the deterioration of building stone and possibly (in high concentrations) on health were made at eleven stations. The sulphur appears to be mainly a winter problem. London shows the highest average pollution of any of the cities and a very obvious seasonal variation pointing again to the domestic fires as a contributory cause. Although doubtless the electric generating stations also burn more fuel in winter than in summer. Of the London stations Westminster Bridge and Westminster City Hall show the most sulphur pollution. Last year the highest concentration was found in London but this year the highest figure found was in Salford during December. Sulphur pollution at Greenwich appears to be about one third of that in the vicinity of Westminster. It seems that Greenwich although suffering from smoke haze as much as London does not suffer equally from sulphur pollution and this suggests that in London there are sources of sulphur which are not serious sources of smoke. This again points to industrial furnaces which have no provision for absorption of sulphur.

Publicity for Venereal Disease

The Minister of Health has sent a circular asking counties and county boroughs to tell him what steps they are taking to disseminate information about venereal diseases. There is evidence the circular says that the public in many parts of the country are still insufficiently informed about the importance of these infections and the necessity for early and skilled treatment. The reports from treatment centres suggest that in many areas only a small proportion of women with the venereal diseases—especially with gonorrhoea—take advantage of the facilities offered. Moreover a substantial proportion cease attendance while they are still potentially infectious. It is of the utmost importance in the Minister's opinion that patients should appreciate the necessity—in their own interest and in that of the community—for completing their treatment. To this end he commends a policy of continuous education and enlightenment. So as to be able to judge how this policy may be developed and rendered more effective he is asking, for full particulars of the arrangements at present made. One of the questions asked is whether a contribution is made to the British Social Hygiene Council and if so what work is done by the Council in the area.

¹Investigation of Atmospheric Pollution. London. H.M. Stationery Office. 1937. 1 p. 1. 6

"Flying Clinics" in Somerset

In order to deal with the medical supervision of maternity and child welfare work in rural areas, Dr W G Savage, the medical officer of health for Somerset, has instituted a system of "flying clinics" which he considers to be far superior to a system of small fixed welfare centres covering the county. The clinics are held when and where occasion arises, often at the request of the infant visitor, and may take place at a nurse's house or at a room taken for the purpose, or visits may be undertaken to several scattered houses in a district. The visiting of children at their homes makes it possible to include those who might well be unable or unwilling to bring their children to a centre. Where the clinics prove welcome and popular they are repeated at short intervals and if the need in any such area, later diminishes, the clinic can easily be discontinued and the work done elsewhere. In his annual report Dr Savage states that the four medical officers held 311 of such sessions during 1935 and attendances totalled 3525, including 115 antenatal and 126 post-natal mothers. It would seem that such clinics might be of very real value to practitioners in outlying districts by providing opportunities for consultation where circumstances would otherwise make a second opinion very difficult to obtain.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED
MAY 8TH, 1937

Notifications—The following cases of infectious disease were notified during the week. Small-pox, 0, scarlet fever, 1882, diphtheria, 985, enteric fever, 36, pneumonia (primary or influenzal), 949, puerperal fever, 35, puerperal pyrexia, 99, cerebro spinal fever, 33, acute poliomyelitis, 1, acute polio encephalitis, 1, encephalitis lethargica, 0, dysentery, 20, ophthalmia neonatorum, 101. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 14th was 2069 which included. Scarlet fever, 797, diphtheria 852, measles, 77, whooping-cough, 481, puerperal fever 18 mothers (plus 11 babies), encephalitis lethargica 283, poliomyelitis 0. At St Margaret's Hospital there were 24 babies (plus 12 mothers) with ophthalmia neonatorum.

Deaths—In 123 great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 19 (0) from measles, 4 (3) from scarlet fever, 12 (1) from whooping-cough, 35 (5) from diphtheria, 64 (23) from diarrhoea and enteritis under two years, and 31 (7) from influenza. The figures in parentheses are those for London itself.

Five deaths from diarrhoea and enteritis under two years were reported from Liverpool and 3 each from Nottingham and Bradford. Salford, Sunderland and Liverpool each had 3 fatal cases of diphtheria. There were 3 deaths from measles at Birmingham and 3 from whooping-cough at Liverpool.

The number of stillbirths notified during the week was 291 (corresponding to a rate of 41 per 1000 total births), including 38 in London.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Rear Admiral P T Nicholls, CB, KHP, to be President for service inside Admiralty Medical Department.

Surg Capt R F P Cory to President for course. Surg Capt J H Burdett, professor of medicine at Haslar Hospital to R N Hospital, Chatham.

Surg Cmdrs M B Devane and A W Gunn, MVO, to Victory for R N B. J A Cusack to Pembroke for R N B, and A W McRorie to President for course. Surg Lt Cdr F Dolan to Drake for R N B.

Surg Lts G H C R Critson to Drake for R N Hospital, Plymouth, D B Jack to Pembroke for R N B. R V Kirkwood to Pembroke for R N B and to Pegasus, R M Bremner to Hastings, D D Steele Perkins to Pembroke for R N B and to Ganges, and I C Macdonald to Cardiff and to R N B, Chatham.

ROYAL NAVAL VOLUNTEER RESERVE

Surg Sub Lt C P Nicholas promoted to Surg Lt.

ARMY MEDICAL SERVICES

The War Office announces the following appointments. Colonel R W D Leslie, OBE, LRCP, Officer Commanding, The Queen Alexandra Military Hospital, Millbank, SW 1, has been selected for promotion to the rank of Major General from August 10th, 1937 and to be Deputy Director of Medical Services, Northern Command, York, in succession to Major General G G Tabuteau DSO, who is taking up the appointment of Director of Medical Services in India.

Colonel A D Fraser, DSO, MC, MB, who commands the Royal Army Medical Corps Depot and Training Establishment at Aldershot, has been selected for promotion to the rank of Major General from Oct 13th, 1937, and to be a Deputy Director of Medical Services in India, in succession to Major General D S Skelton, CB DSO, honorary physician to the King, who will vacate the appointment on completion of four years' service as a Major General.

ROYAL ARMY MEDICAL CORPS

Maj J R S Mackay retires on ret pay.

Short Service Commissions. Lt P Coleman to be Capt. The following candidates have been selected for short service commissions as Lts on probation. F Livesey (Manchester Univ), C E McCloghry (Queen's Univ, Belfast), C McNeil (Cambridge Univ and St Bartholomew's Hosp), G G Sherriff (Edinburgh Univ), G M Curtis and E Garoh (Guy's Hosp), J B Bunting (Cambridge Univ and St Thomas's Hosp), R B Robertson (St Andrew's Univ), A T M Glen (Westminster Hosp), K F Stephens (London Univ and St Bartholomew's Hosp), G M Robertshaw and O W W Clarke (The London Hosp), R L Townsend (Cambridge Univ and University Coll Hosp), F J S Baker and J B Dancer (St Bartholomew's Hosp), O Jordan (St Mary's Hosp) and N Bickford (Cambridge Univ and Middlesex Hosp).

The following Lts (on prob) are sec'd, under the prov of Art 213, Royal Warrant for Pay. C McNeil and F J S Baker.

REGULAR ARMY RESERVE OF OFFICERS

Lt Col G H Stevenson DSO, having attained the age limit of liability to recall, ceases to belong to the Res of Off.

TERRITORIAL ARMY

F C Angor to be Lt. P Howe (late Offr Cadet, Liverpool Univ Contgt, Sen Div, OTC), to be Lt, E H P Smith (late Cadet Serjt, Epsom Coll Contgt, Jun Div, OTC) to be Lt, K G S Bavidge (late Offr Cadet, Durham Univ Contgt (Med Unit), Sen Div, OTC), to be Lt and A G McCallum (late Offr Cadet Glasgow Academy Contgt, Jun Div, OTC), to be Lt.

The Efficiency Decoration has been conferred under the terms of the Royal Warrant dated Sept 23rd, 1930, on Maj Alfred Pam.

TERRITORIAL ARMY RESERVE OF OFFICERS

Capt D M Mackenzie from Active List to be Capt.

ROYAL AIR FORCE

Flight Lts promoted to the rank of Squadron Leader: R E Alderson and J Kemp.

INDIAN MEDICAL SERVICE

Lts (on prob) to be Capts (on prob)—S C Colbeck, J H Bowie, W S Empey, OBE, A G Miller, E H Wallace and J F Thomson.

Lts (on prob)—G R Kerr, B J Doran, and J D Munro are res'd to the estab.

To be Lts (on prob) S Shone, J H Walters, C F Mayo Smith, W C Templeton, G W Palmer, G F J.

(Continued at foot of opposite page)

King's College Hospital

The Listerian Society of this hospital will meet on Wednesday, May 26th, at 8.15 p.m., when Dr Edward Mapother will deliver a presidential address. His subject will be the psychiatry that is coming.

Medical Caricatures and Cartoons

The Staatliche Medico Historische Sammlung in Berlin intends to hold next autumn an exhibition of caricatures and cartoons dealing with medicine. It will comprise both caricatures of individual members of the profession and cartoons concerned with various methods of treatment and diagnosis, and it will cover the past as well as the present. The organisers feel sure that many sketches will be available in various publications of medical and students' societies, while periodicals such as *Punch* and the *New Yorker* should also furnish plenty of material. Anyone in possession of such material or knowing where it may be found is asked to communicate with the Staatliche Medico Historische Sammlung at the Kaiserin Friedrich Haus, Robert Koch Platz 7, Berlin, NW 7.

British Postgraduate Medical School

An intensive course, intended primarily for practitioners, will be held at this school from May 31st to June 12th (10.30 to 4.30 daily). Among those giving lectures and demonstrations will be Prof Thomas Beattie, Prof G. Grey Turner, Dr E. R. Cullinan, Mr R. J. McNeill Love, Dr R. T. Brain, Dr Evan Bedford, Dr J. R. Rees, Mr C. I. Naunton Morgan, Dr T. C. Hunt, Dr James Maxwell, Dr Janet Vaughan, Dr J. Chassar Moir, Dr W. Gunn, Mr St. J. D. Buxton, and Dr H. Gardiner Hill. Sessions will also be held at the Central London Throat, Nose, and Ear Hospital, the Red Cross Clinic for Rheumatism, the Royal London Ophthalmic Hospital, the Hospital for Sick Children, Great Ormond Street, and the National Hospital, Queen Square. Early application for membership of this course is recommended, and further information may be had from the dean of the school, Ducane Road, London, W 12. Similar courses lasting a fortnight will begin on June 28th, Sept 20th, Oct 18th, and Nov 15th.

Beginning on May 25th, at 4.30 p.m. on Tuesdays Dr Donald Hunter will give six lectures on occupational diseases. Prof M. Greenwood, F.R.S., will lecture on experimental epidemiology on June 2nd, 9th, and 16th at the same hour.

Medical Sickness, Annuity and Life Assurance Society

At the annual meeting of this society held in London on May 10th, Dr F. C. Martley, the chairman of directors, reported a very satisfactory result of the actuary's valuation for the 44 years ending last December. The total surplus on sickness and life assurance funds amounted to £225,639, of which it was proposed to distribute £153,000 as bonus and to carry forward the remainder. The bonus was to be increased from 12s to 15s per annum on the main class of sickness policies for each guinea per week insured, and from 23s to 25s per annum on the life assurance side for each £100 insured, together with a bonus on all combined policies at the same rates as if separate policies had been effected for the two benefits. During the year under review the new sums assured under life assurance amounted to close upon half a million, the total premium income in this department was now £111,856. A large proportion of the total premiums was in respect of the deferred annuities under the scheme which the society helped to operate for members of the British Medical Association and for insurance practitioners. The society's family provision policy was also proving very popular. Its chief advantage was that at the age of sixty the premiums paid did not disappear but a guaranteed sum was payable. On the sickness fund the new annual premiums totalled to £10,702 which constituted a record; the premium income on this fund amounted to £108,637. Not only were the society's rates lower than were obtainable elsewhere, but it paid a bonus at the normal termination of each contract. The expenses of management were just over 9 per cent of the premium income and represented a reduction on previous years.

Dr Martley concluded with a word of appreciation of the staff, in particular Mr Bertram Sutton, manager and secretary, Mr E. A. J. Heath, and Mr C. L. Venus.

The meeting unanimously adopted the report of the directors and re-elected those who retired by rotation (Dr W. Knowles Sibley and Mr R. J. McNeill Love). On the proposition of Mr Cecil Wakeley, seconded by Dr Fairfield Thomas, the meeting also unanimously agreed to an increase in the remuneration of the directors. Sir William Willcox moved a vote of thanks to the chairman and this was seconded by Dr G. de Bee Turtle.

Inter-Hospitals Sports

The sixty-sixth annual inter hospitals sports will be held on Wednesday, May 26th, at 2.30 p.m., at the Duke of York's Headquarters, Chelsea.

Greater London Provident Scheme for District Nursing

For nearly 70 years district nursing has been provided in London largely as a charity, but as the work grew it has been found necessary to ask for payment, by the visit, from those who could afford it. This sometimes caused a financial strain in times of illness. To avoid this under the new scheme launched last month (*Lancet*, April 24th, p. 1020) payment will be made in the form of small weekly contributions. Any person who works in a place where five or more people are willing to join the scheme, and whose earnings do not exceed £8 per week can call upon the services of a district nurse for himself and his dependents for a weekly contribution of 1d. If all his fellow workers take advantage of the scheme, the subscription for each employee will be only 1d per week. Anyone whose income exceeds £8 per week but does not exceed £400 a year may join the scheme for a weekly contribution of 1½d. Further information may be had from the offices of the scheme, 1, Sloane Street, London, S.W. 1.

Maternity and Child Welfare Conference

The seventh English speaking conference on maternity and child welfare will be held at B.M.A. House, Tavistock Square, London, W.C., on June 1st, 2nd and 3rd. The following is a list of speakers and subjects: Dr Mary Blacklock, Dr Mabel Brodie, and Mrs Randal Hosking (the promotion of maternity and child welfare in backward and in rural areas); Mr R. J. Howard Roberts and Miss Eleanor Harwarden (progressive legislation in connexion with maternity and child welfare); Dr Eric Pritchard, Dr Ursula Cox, and Mrs Charlesworth (the education of parents in the care of their children); Dr Robert McCance and Dr Reginald Jewsbury (nutritional problems in relation to mother and child); Dr Margaret Lowenfeld and Dr J. A. Hadfield (the future of preventive psychology in relation of parent and child); Dr B. E. Schlesinger and Mr E. S. Evans (preventive work for cripples and invalid children). Visits will also be paid during the conference to various institutions in and near London, and on May 30th and 31st a short post graduate course has been arranged by the maternity and child welfare group of the Society of Medical Officers of Health. A child welfare exhibition will be held in connexion with the congress at Woburn House (exactly opposite B.M.A. House). Further information may be obtained from the hon. secretary, Carnegie House, 117, Piccadilly, W. 1.

Appointments

ANSON C. E. H. M.B. Lond. has been appointed Medical Superintendent of the Royal National Sanatorium, Bournemouth.
 ASCROFT P. B. M.S. Lond. F.R.C.S. Eng. Assistant Surgeon to the Middlesex Hospital.
 BARNIE C. R. M.D. M.R.O.P. Lond. D.P.M. First Assistant Medical Officer at West Park Hospital, L.C.C.
 *BULLOUGH A. S. M.B. Manch. Resident Assistant Medical Officer (Grade II) at Withington Hospital, Manchester.
 *CURRIE F. R. M.B. Leeds, Assistant Pathologist at White chapel L.C.C. Clinic.
 DALZIEL A. C. M.D. Lond. D.P.M. Second Assistant Medical Officer at Bexley Hospital, L.C.C.
 GILMOUR J. M.B., F.R.C.S. Eng. Hon. Surgeon to the Royal Victoria Infirmary, Newcastle upon Tyne.
 MCGUCKIN FRANK M.D. Durh. F.R.C.S. Edin. Consulting Surgeon for Throat, Nose and Ear Cases at the Newcastle-upon Tyne General Hospital.

NOTES, COMMENTS, AND ABSTRACTS

THE RED CROSS RHEUMATISM CLINIC

THE annual report of the British Red Cross Society's Clinic for Rheumatism shows that the work is steadily increasing and that the attendances in the general department were 5812 more than in any previous year. While this increase is a tribute to the value of the work carried out at the clinic the figures also imply that its accommodation is being unduly strained, and the burden imposed on the staff is heavy. If long periods of delay before patients urgently needing treatment can be accepted are to be avoided, it is essential that the premises should be enlarged. We understand that schemes to this end are already under consideration and it is to be hoped that the authorities will soon be in a position to carry them out. More funds are urgently needed. The results of treatment according to the records appear to be very satisfactory, 80.3 per cent patients were discharged free from symptoms and a further 29 per cent were definitely improved. The medical board modestly point out that these figures should be accepted with some reserve. The clinic is not only a centre for treating professional and industrial workers, research is being actively pursued on the valuable clinical material available under the direction of a special committee formed last year for the study and investigation of rheumatism. The lack of in-patient accommodation hampers research and that also should be made available when funds permit.

INSTITUTIONAL TREATMENT OF EPILEPSY IN SCANDINAVIA

THE alertness of the Scandinavian countries about each other's virtues and vices is partly responsible for the high level of their culture. For one country to lag behind in some good work is to invite disparaging comparisons in the other countries, and at the present time, Denmark, Sweden, and Finland are being held up as examples to Norway as regards the institutional treatment of epilepsy. Denmark comes first in this comparison with 2 beds for epileptics for every 10,000 inhabitants, Finland comes next with 1 bed, and Sweden comes third with 0.9 bed, whereas the corresponding figure for Norway is only 0.25. A census of epileptics conducted in Norway in 1929 by medical officers of health showed that there must be about 1900 epileptics, of whom more than 400 require institutional treatment. It is more than probable that this census failed to include many slight cases of epilepsy, and the figures quoted are assuredly under-estimates. For the more than 400 epileptics requiring institutional treatment there are at present only 68 beds in Norway, and this glaring discrepancy between supply and demand has led to the appointment by the Government of a committee charged with the task of estimating the country's requirements for beds for epileptics, and with drafting legislation for their care. This committee's studies have been extended to England and Germany as well as to the other Scandinavian countries.

The experiences of Denmark have proved most instructive. She is the only Scandinavian country in which a hospital for adult epileptics has been created. It is "Filadelfia" with accommodation for 445 epileptics over the age of fifteen. Of its seven medical officers, two are specialists in neurology and mental disease. Epileptics who are imbecile from birth are drafted as much as possible into institutions for the mentally defective, and the inmates of Filadelfia are encouraged to find recreation in work such as carpentering, shoe making, tailoring, book-binding, &c. In addition to this hospital there are four smaller institutions: the accommodation of all five being 680 beds. In Sweden there are eight institutions for epileptics and "Stor Sköndal," with 212 beds serves as the central hospital in the neighbourhood of Stockholm. Altogether there are some

700 beds for epileptics in Sweden, and it is the ambition of Prof. Petréén to centralise the institutional treatment of epilepsys as much as possible, and to attach to a large epileptic hospital a department for mentally defective and insane epileptics. In Finland, with some 300 beds for epileptics, there is the same tendency as in Denmark and Sweden to favour a large central institution. It is held that the larger the institution the more skilful will be the treatment. The institution which is too small to employ a resident medical officer is bound to give comparatively inadequate service.

DANGERS OF ARTERIOGRAPHY

SINCE arteriography is sometimes recommended as innocuous E. Verschuyt has thought it well to bring forward a number of cases in which it gave rise to complications (*Ned. Tydschr. Geneesk.* 1937, 81, 1007). Two of these were in his own practice.

(1) A man, aged 70 was admitted to hospital with a history of sudden pain and numbness of the right leg. The entire limb was blanched and could not be moved actively: it was tender and felt cold. No pulsation could be detected in the dorsalis pedis, popliteal or femoral arteries. The vessels did not feel hard or thickened. A systolic murmur was heard over the heart. The diagnosis was thought to lie between acute spasm and embolic obstruction of the femoral artery, and arteriography was decided upon. The abdominal aorta was punctured, 20 c.cm. of 35 per cent Perabrodil was rapidly injected, and an X-ray photograph was taken. This showed that the solution had not passed on the right side beyond the upper part of the common iliac artery. Immediately afterwards, however, the pain ceased, the limb resumed its normal colour and temperature, and could be moved actively. A diagnosis of spasm was made. A few days later the patient suddenly died and at autopsy a rupture of the ascending aorta was found. Verschuyt attributes this to damage caused by the injected fluid, for apart from a few small plaques of atheroma the aorta appeared healthy.

(2) A woman aged 28, complained of pain in the right forearm, with cyanosis and swelling. Other abnormal signs were absent and there was no history of trauma. The diagnosis of angioneurosis was made and arteriography was performed, 20 c.cm. of perabrodil being injected into the subclavian artery. The patient was immediately seized with a typical epileptic fit lasting about two minutes and followed by severe headache. She recovered completely in about 30 hours, and the arteriogram revealed no abnormality.

Verschuyt concludes that arteriography is by no means devoid of danger and that it should not be lightly employed.

PULMONARY EMBOLISM AFTER INJECTIONS INTO VARICOSE VEINS

Dr. Anders Westerborn of Varberg, Sweden, has recently published¹ a study which should do much to dispel fears about fatal pulmonary embolism more or less directly due to the thrombosis induced by injections of various substances into varicose veins. His investigations were in part prompted by a lurking suspicion that such fatalities do not always get into the medical press, the urge to publish successes being notably greater than any willingness to admit disasters. However instructive they may be. In 1929 H. O. McPheeters and C. O. Rice (*J. Amer. med. Ass.* 1928, 91, 1000) found in reports by various authors a mortality of only 0.0075 per cent, and a similar review by K. Ketteln in 1931 (*Zbl. Chir.* 1931, 58, 1498) raised the figure to 0.017 per cent. To avoid the sources of error inherent in such compilations, Westerborn addressed inquiries to all the 93 hospitals in Sweden. Information was obtained from 80, and he was able to calculate that in the period 1927-34 some 30,000 patients with varicose veins must have

¹ *Acta chir. scand.* 1937, 79, Fasc. IV, p. 321.

been treated in the 93 hospitals by the injection of thrombogenic solutions. The 11 deaths from pulmonary embolism and the 6 severe cases with recovery in this material represented what may be considered as a comparatively accurate picture of the embolism risk. The mortality was 0.036 per cent—considerably higher than that obtained from other published work yet many times lower than that for more radical operations on varicose veins. In the five-year period 1931-2, 6001 operations not yet ousted by the injection treatment were performed on varicose veins in 82 Swedish hospitals and 18 patients died of pulmonary embolism—a mortality of 0.26 per cent the corresponding figure obtained by McPheeters and Rice being 0.1 per cent (36 deaths from embolism among 6071 cases). Though this comparison with operative treatment is favourable to the injection treatment it is not quite fair to the latter which is still in its youth and many of whose fatalities may be due to avoidable mistakes. Westerborn traces a goodly proportion of the embolism fatalities to infections, local or general and to the stagnation of circulation promoted by confinement to bed after an injection. He regards the bedridden state as a definite contra indication and he is in favour of keeping a patient out of bed as much as possible just after injections. His comparison of the embolism rates for the different chemicals used shows that there is little to choose between them so long as they are not introduced as isotonic solutions. It is curious how different countries prefer different chemicals. In the past quinine urethane has been the most popular in Sweden, America and England whereas Germany and Central Europe have preferred solutions of sugar and sodium chloride. Now it seems that quinine-urethane is being displaced by sodium morrhuate which has the advantage of not provoking necrosis of the tissues when a perivascular injection is given by mistake.

CECIL HOUSES

FOUNDED ten years ago by Mrs Cecil Chesterton the public lodging houses for women known as Cecil Houses fill what was a very serious gap in the provision for London's homeless. With the reopening this year of the house in Devonshire-street, Theobalds-road there will be five houses in the London area each providing clean beds, hot baths and facilities for washing clothes for from fifty to sixty women at a cost of a shilling a night for each woman. There is also accommodation for babies at the houses, which are non-sectarian; any homeless woman is admitted and no questions are asked. Once the initial capital expenditure of some £7000 is found a house becomes entirely self-supporting although subscriptions are much needed for replenishment and the extension of activities. In addition to their primary object of providing lodging the staff are able to find employment for a number of those who are in need of it and do much to help the women to regain their self-respect by the distribution of gifts of clothing and boots and shoes.

NEW PREPARATIONS

THE Crookes Laboratory (British Colloids Ltd.) of Park Royal, London, W.10, now issues their Colloidal Brand PRO-PRO-MANDELAT in a box containing all that the patient wants for carrying out six days' treatment. The ammonium phosphate is white; the mandelic acid is coloured pink, and containers showing the exact doses are provided together with a book of test papers for determining the approximate pH of the urine.

THE PROPHYL ATOMISER is used as a spray for throat or nose. Its chief advantages are that it has a screen cap which closes it when travelling; that it can be conveniently used with one hand; and that it provides a fine vapour. The manufacturers (Prophyl Co. Ltd., 7 Prince-street, S.W.1) make an oily antiseptic fluid (Prophyl No. 1) for use as a spray in the prevention or treatment of colds and influenza. The formula is given as follows: 1.000

0.025; phenol 0.2; iodo 0.02; sodium ricinolate 0.1; menthol 0.02; liquid paraffin to 100.

A booklet on the Technique of Parenteral Calcium Medication with special reference to CALCIUM-SANDOZ is published by J. Flint, Sandoz Products, 134 Wigmore-street, London W.1. It points out that the ease and safety of giving calcium in adequate doses by injection has extended the applications and improved the results, of this form of treatment. With excellent illustrations it describes exactly how Calcium-Sandoz is best injected including an account of intrapleural administration and of intranasal submucous injection as recommended in THE LANCET by Prof Bárány shortly before his death. The manufacturers claim that a satisfactory solution of calcium gluconate is by no means easily prepared and state that Calcium Sandoz, the first to be introduced is always tested clinically for each batch before general issue. The ampoules now contain calcium gluconoglucoactogluconate which has advantages over the ordinary gluconate.

Particulars of the many bismuth products of PHARMACEUTICAL SPECIALITIES (May and Baker) Ltd. Dagenham are given in a small book on BISMUTH THERAPY in which they summarise the history of bismuth as a remedy, its mode of action, its clinical application and the way in which it is used. For the intravenous injection of bismuth it is recommended that the needle when introduced should have an empty syringe attached to it. When by withdrawing blood it has been ascertained that the needle is in the vein a second syringe filled with the drug is substituted for the first. Deep subcutaneous injection may be preferred; but in any case deep and firm massage is advisable to spread the bismuth after its administration. Precautions against stomatitis and other possible complications are mentioned.

A NEW REMEDY FOR HÆMORRHOIDS

IN a preliminary note on the use of an extract of *Microseris dubius* in the treatment of hæmorrhoids H. E. Mercante and J. F. H. Piazza describe their results in 12 cases (*Rei und anner Endocrin* 1937, 20, 61). The method adopted was continuous application on cotton wool of a 5 per cent oil solution of an extract of the whole worm. The result it is said in all 12 cases was cessation of pain, pruritus, and other subjective symptoms and bleeding too ceased almost at once. In recent cases a course of treatment lasting 15-20 days was followed by clinical cure with no relapses during a period of observation of nine months. The solution was successfully employed also in a case of varicose ulceration of four years' duration and the ulcers were fully healed after 11 days of treatment. Clinical and laboratory investigations of the new remedy are being continued.

CLINICAL AND LABORATORY PHOTOGRAPHY.—Messrs Kodak Ltd. have constructed what they call a clinical camera outfit—an advanced photographic unit intended to have a precise comparison with that of other instruments that assist workers are accustomed to handle. It is meant to satisfy the exacting demands of the medical worker but also to find many applications outside medical work. Particulars may be had from the makers at Kodak House, Kingsway, London W.C.2.

Vacancies

For further information refer to the advertisement columns.

Abchurch Lane General Hosp.—Gen. and Jan. H. at rate of £10 and £150 respectively.
Bangor General Hospital and Infirmary.—a. H. 10.
Bath City.—M.O. for Poor Law Infirmary & Bath General Hospital & Committee.—a. H. 10.
Birmingham City H. General.—a. H. 10 and a. H. 10.
Bristol City H. General.—a. H. 10 and a. H. 10.
Bristol City H. General.—a. H. 10 and a. H. 10.
Bristol City H. General.—a. H. 10 and a. H. 10.

Bournemouth, Royal National Sanatorium—Res Asst M O £200
 Bradford Royal Infirmary—Hon Asst Physician
 Brighton Royal Alexandra Hosp for Sick Children—H S, £120
 Brighton, Royal Sussex County Hosp—H P £150
 Brighton, Sussex Eye Hosp, Eastern-road—H S at rate of £150
 British Postgraduate Medical School, Ducane road, W—Asst in Bacteriology in Dept of Pathology £300
 Chelsea Hosp for Women, Arthur street, S W—Jun H S at rate of £100
 Cheltenham General and Eye Hosp—H S, £150
 Connaught Hosp, Walthamstow, E—Sen Res M O, at rate of £175 Also H P H S, and Cas O each at rate of £110
 Coventry and Warwickshire Hosp—Res H S Cas O, and Res H S to Aural and Ophth Depts each £150
 Coventry City of—Asst M O (Woman) £500
 Derbyshire Hosp for Sick Children—Res H S, at rate of £130
 Deccubry and District General Infirmary—Sen. H S £200 Also Second H S, £150
 Dudley Guest Hosp—Second H S £120
 Eastbourne, Princess Alice Memorial Hosp—Surgeon. Also Asst Physician
 Edinburgh Royal Infirmary—Jun Asst Radiologist, £350
 Elizabeth Garrett Anderson Hosp, Euston road N W—Temp Hon Asst Surgeon and Temp Hon Asst Obstet. Surgeon
 Evelina Hosp for Sick Children, Southwark, S E—H P, at rate of £120
 Gloucestershire Royal Infirmary—H S at rate of £150
 Gordon Hosp for Rectal Diseases, Vauxhall Bridge road, S W—Res H S £150
 Guildford Royal Surrey County Hosp—H S, at rate of £150
 Hampshire Joint Mental Health Institutions Committee—Principal Medical Adviser, &c, £1400
 Hawkmoor Sanatorium near Bovey Tracey—Res Asst M O at rate of £250
 Hebron, St Luke's Hosp—Asst Res M O £200
 H.M. Colonial Medical Service.—Vacancies for M O s £2000-£700
 Hosp for Sick Children, Great Ormond street, W C—Res H P and Res H S each at rate of £100
 Hosp of St John and St Elizabeth 60 Grove End road N W—Ophth Surgeon
 Hosp for Women, Soho square W C—Res M O at rate of £100
 Huddersfield Royal Infirmary—Cas O, at rate of £200
 Hull Royal Infirmary—H S to Ophth. and Ear, Nose, and Throat Depts, Second H P and Second Cas O each at rate of £150
 Ilford Borough—Res M O for Maternity Home £400
 Ilford, King George Hosp—Reg Surg O £250 Med Reg, £150 Also Two H S s, each at rate of £100
 Isleworth, West Middlesex and County Hosp—Cas M O, at rate of £350
 Kensington Royal Borough—Deputy M O H, £900
 Kettering and District General Hosp—Res M O and Second Res M O, at rate of £160 and £140 respectively
 Kingston and District Hosp—Res Asst M O, at rate of £375
 Lancashire County Council—Asst County M O H £800 Also Temp Asst Tuber O 15 guineas weekly
 Leamington Spa Royal Borough—M O H and School M O, £800
 Liverpool University—Research Asst in Dept of Medicine £600 Also Demonstratorship in Anaesthesia Part-time £100
 London Homœopathic Hosp, Great Ormond street W C—Gynaecological H S at rate of £100
 London Lock Hosp, 283 Harrow road, W—Res M O to Male Dept at rate of £175
 London University—University Readership in Obstetrics and Gynaecology for British Postgraduate Med School £800
 Luton Borough—Res M O to New Maternity Hosp and Asst M O H £350
 Manchester Accidents Hosp—Res Surg O, £200
 Manchester, Duchess of York Hosp for Babies—Hon Asst Anaesthetist
 Manchester Royal Infirmary—Med Chief Asst. £300
 Middlesex County Council—Asst M O £600 Also Asst. Dental O £500
 Ministry of Health Whitehall—Staff M O s, £847
 Newport, Mon. Royal General Hosp—Two H S s each at rate of £135
 Nottingham General Dispensary—Res Surgeon £300
 Nottingham General Hosp—H S for Ear, Nose, and Throat Dept and two Res Cas O s each at rate of £150
 Oldham Municipal Hosp—Res Asst M O at rate of £200
 Oldham Royal Infirmary—H S at rate of £175
 Oxford Wingfield Morris Orthopaedic Hosp, Headington—Lord Nuffield Scholarship in Orthopaedic Surgery £200
 Plymouth Prince of Wales's Hosp, Deconport—Jun H S at rate of £120
 Plymouth, Prince of Wales's Hosp, Greenbank-road—H P at rate of £120
 Preston and County of Lancaster Royal Infirmary—R.M.O and H S, each £150
 Princess Beatrice Hosp, Earls Court S W—Med Reg 50 guineas
 Princess Elizabeth of York Hosp for Children Shadwell E—H P H S and Cas O each at rate of £125
 Queen Charlotte's Maternity Hosp, Marylebone road N W—Hon Gen Surgeon Also Obstet Surgeon to In patients
 Queen's Hosp for Children Hackney road E—H P and Cas O each at rate of £100
 Queen Mary's Hosp for the East End Stratford E—Res M O Two Cas and Out patients O s each at rate of £150 Also Two H S's H P Obstet H S and Res Anaesthetist and H P each at rate of £120
 Reading Royal Berkshire Hosp—Res Cas O and H S to Special Depts each at rate of £150
 Rotherham Hosp—Cas H S £150

Royal Free Hosp, Gray's Inn road, W C—First H.P. Also Res Cas O at rate of £150
 Royal Naval Medical Service.—M O s
 Royal Waterloo Hosp for Children &c, Waterloo road, S E—Cas O at rate of £150 Also H S at rate of £100
 St John's Hosp, Levensham S E—Orthopaedic Registrar
 St Thomas's Hosp S E—Physician
 Salford Royal Hosp—Psychiatrist £52
 Salisbury General Infirmary—Res M O £250 Also H P, at rate of £125
 Sheffield Royal Infirmary—Ophth H S, Aural H S Also H S, each at rate of £80
 Shrewsbury Royal Salop Infirmary—Res. H P, at rate of £160
 Southampton Royal South Hants and Southampton Hosp—H P Cas O and Res Anaesthetist and H S to Ear, Nose and Throat Dept, at rate of £150 Also Locum Tenens Radium Officer 12 guineas per week
 Southend-on Sea General Hosp—Surg Reg, £275
 Staffordshire County Council—Res Asst. M O for Wordsley Public Assistance Institution at rate of £300
 Stockport, Stepping Hill Hosp—Res Asst. M O at rate of £200
 Stoke-on Trent, Burslem, Haywood, and Tunstall War Memorial Hosp—Res H S at rate of £175
 Stroud General Hosp—Res M O at rate of £100
 Taunton Borough.—Part time Asst to M O H, 1½ guineas per session
 Torquay, Torbay Hosp—H P, £175
 University College Hosp, Gower street, W C—Hon Asst. Physician
 Weir Hosp, Grove road, Balham S W—Jun Res M O £150
 West London Hosp, Hammersmith-road W—Jun Asst M O for V D Dept £350 Also H P and Two H S's each at rate of £100
 Wilkesden General Hosp, Harlesden road, N W—Hon Clin Asst to Out patient Dept
 Winchester, Royal Hampshire County Hosp—Res Surg O and H P at rate of £200 and £125 respectively
 Worcester Royal Infirmary—H S to Gynaecological Dept £140
 Workson, Victoria Hosp—Sen and Jun Resident, £150 and £120 respectively
 The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Old Meldrum (Aberdeen), Quorn (Leicester), Shanklin (Isle of Wight), Bradford East (York), West Riding) Hessle (York), East Riding), and Innerleithen (Peebles)

Births, Marriages, and Deaths

BIRTHS

COOKE.—On May 12th at Fulwood Preston the wife of R T Cooke, M.D. of a son
 ETTLES.—On May 12th the wife of Capt D C McC Ettles R.A.M.C. of a son
 FRANCES.—On May 6th, at Arnold Notts the wife of Dr John H Frances, of a son
 GRAHAM.—On May 12th the wife of Dr Kenneth Graham, 18 Tavilton street W.C. of a son
 ISBISTER.—On May 12th at Devonshire place W the wife of Dr Rollo Isbister of a daughter
 JONES.—On May 9th at Ipswich, the wife of Dr Ronald Jones of a son
 KETTLEWELL.—On May 14th, at Cranleigh the wife of Dr Bernard Kettlewell of a daughter
 MELLOWS.—On May 14th the wife of Dr H S Mellows of a son
 Wickham Kent of a son
 ORMEROD.—On May 14th at Clifton the wife of Dr G L Ormerod of a son
 RAMAGE.—On May 12th at Stoke-on Trent the wife of Mr John Steven Ramage F.R.C.S. of a daughter
 TUCKETT.—On May 13th, at Tonbridge the wife of Mr Cedric Tuckett F.R.C.S. of a son
 WALKER.—On May 9th at Wolverhampton the wife of Mr Robert Milnes Walker F.R.C.S. of a daughter
 WILSON.—On May 12th at Radry, Glam the wife of Dr John Greenwood Wilson, of a daughter

DEATHS

ADAMS.—On May 10th at Eastbourne James Adams, M.D. Aberd F.R.C.S. Eng aged 87
 BRACKETT.—At Naivasha Kenya Colony Francis Henry Mears Alden Beckett M.B. Camb late of Ely Cambridgeshire
 BRUSHFIELD.—On May 17th at St Leonards on Sea Thomas Brushfield, M.D. Camb aged 70
 DODSON.—At C.M.S. Hospital Kerman Iran George Everard Dodson M.R.C.S. Eng
 EDGE.—On May 17th at Wolverhampton Frederick Edge M.D. F.R.C.S. in his 74th year
 FORT.—On Feb 16th at Peniticon British Columbia of pneumonia Charles Levland Fort M.R.C.S. Eng aged 67
 GRAY.—At Little Mead Holtre Cowden Kent on May 12th A. Charles E Gray O.B.E. M.D. funeral at Holtre Church on May 15th at 11.30 A.M.
 JENNINGS.—On May 12th at Cornwall gardens S.W. Brevet Col Edgar Jennings I.M.S. retired
 LYDON.—On May 15th Helen Anderson M.B. N.U.I. wife of Dr F. L. Lydon of Golders Green aged 34
 MURCHISON.—On May 12th Finlay Murchison M.B. Fdin late Resident Licentiate of W.V.K. House Isleworth
 ROWE.—On May 11th at Bradford Joseph Hambley Rowe M.B. Aberd aged 66
 SCOTT TURNER.—On May 12th at Ankerley Arthur Scott Turner, M.R.C.S. Eng J.P. aged 68
 WILSON.—On May 12th W. Bernard Wilson M.R.C.S. Ed., of Streatham hill S.W.
 A fee of 7s 6d is charged for the insertion of Notices of Births, Marriages and Deaths

ADDRESSES AND ORIGINAL ARTICLES

THE BIPP METHOD OF TREATMENT OF ACUTE OSTEITIS*

By JAMES H. SAINT MILDURD, F.R.C.S. Eng.
F.A.C.S.

CONSULTING SURGEON TO THE THOMAS ROBERT MEMORIAL HOSPITAL, BUTH, AND SENIOR SURGICAL REGISTRAR AT THE ROYAL VICTORIA INFIRMARY, NEWCASTLE-ON-TYNE

(Concluded from p. 1217)

Discussion of the Various Modern Methods

While most methods of treatment of acute osteitis consist of some form of operative attack on the bony focus with or without some special type of general treatment of the blood condition present there appears to have been only one surgeon who had the courage to ignore entirely the bony focus. This was the late H. Tyrrell Gray, who employed intra-venous mercuric chloride together with anti-staphylococcal or anti-streptococcal serum according to which organism was found on blood culture. Although he did not mention the number of cases he had so treated he stated in 1934 that in the last five years he had lost only one case and that there had been no case of sequestration. He admitted that in desperate cases there was a great deal of anxiety for the surgeon who wished to hold rigidly to these principles of treatment, and while lack of courage alone to face such an anxiety will probably always prevent this form of treatment from becoming popular the principle of disregarding the bony focus does not appear to be sound. As mentioned previously before infection of the bone occurs—that is, before the case actually becomes one of acute osteitis—there is present a mild form of septicaemia but the more severe systemic infection that forms part of the clinical picture of acute osteitis becomes evident only after the development of the bony focus and must be due to the passage of toxins or organisms into the blood stream from that focus a fact that does not appear to be generally recognised and one that calls at once for the immediate treatment of the bone involved. Furthermore the absence of sequestration recorded by Tyrrell Gray after total disregard of the bony focus appears extraordinary for since pus is usually present it seems unlikely that sequestration can be prevented unless it is removed or at the least some means is provided for its escape. Since the Bipp method of treatment is soundly based on the pathology present and will save life shorten the illness prevent sequestrum formation and lead to a minimum of morbidity it is considered that this method provides sufficient reasons for not having to face the anxiety that Tyrrell Gray mentioned.

The value of antiserum and immunisation therapy remains questionable for the results obtained by those who advise and apparently practise them do not appear to recommend their use. It is better however that an open mind be kept on this subject.

It is considered that of general measures by far the most important consists in putting the patient on a balcony where he is in the open air and at the same time can obtain as much sunshine as may be available while nursing food and plenty of fluids are a *sine qua non*.

OPERATIONS

The operative procedures employed in this disease will be discussed in order from the least to the most radical.

Incision of the soft tissues down to the bone—This as a method of treatment is a usually mentioned in connexion with subperiosteal abscess the opening and drainage of this being the only treatment employed. Such an abscess representing as it does a complication due to spread of infection from the bony focus indicates not only delay in diagnosis but suggests that pus is present in the bone. This being so it seems that to ignore that pus means inadequate treatment since its presence in the bone must always be a factor threatening either necrosis because of compression of blood vessels or a more severe blood infection by its escape into the blood stream through the wide valveless veins in the bone. While both Starr (1922) and Holman (1934) favour this form of treatment the latter actually advocates delay in treatment until there is definite evidence of pus formation on the grounds that such conservative measures give the patient a chance to develop some degree of immunity. He states that if the patient is seriously ill and the local signs not well marked, then expectant treatment should be instituted. With this I would agree if I had ever found this combination but in my experience patients who are seriously ill have the local signs only too well marked indicative of a delay in diagnosis that may cost the patient his life. It also shows that the patient's serious plight is due not to the original mild septicaemia that made possible the development of the bony focus but to the severe septicaemia caused through reinfection of the blood stream from the bony focus this forming a potent reason why that focus should be attacked without delay and why early diagnosis is essential to obtain the best results. Holman lost 3 cases out of 31 a mortality of only 9.7 per cent but he states that most of his cases had to have one or more secondary operations for the removal of sequestra thus indicating how prolonged the illness may be that results from this form of treatment. Mitchell (1928) has pointed out that operations for the removal of sequestra are by no means devoid of risk and that prolonged illness lessens the chance of a good functional result. To show that a case treated by this method can heal without sequestrum formation Starr gives as an example a case of acute osteitis of the lower end of the humerus that healed completely in three weeks after operation but unfortunately neither the description of the case nor the radiograms accompanying it would prevent it from having been one not of acute osteitis of the lower end of the humerus but of suppurative of the epitracheal gland. In a later publication Starr (1927) describes a typical case treated by this method. The patient was admitted in May 1922 and had two subsequent operations for the removal of sequestra in September and in December 1923 the wound having discharged during the whole of the time and not healing until two months after the removal of the second sequestrum. A recurrent abscess was opened in March 1924 and healed quickly after drainage was established. Although Starr states that some time after healing examination of the patient showed that there was no deformity and that the function of the leg was normal yet it is difficult to be enthusiastic about a method of



FIG 6A—Acute osteitis of lower end of femur treated by incision of the soft tissues. Radiogram three months after operation to show great thickening of bone and sequestrum

FIG 6B—Same case seven months after operation. The sequestrum has been removed and another has formed. See text and compare with Fig 11

treatment resulting in such a protracted post-operative history

As illustrating a common result of this method of treatment, Fig 6 is of interest. The case was one of acute osteitis of the lower end of the femur treated by incision and drainage of a subperiosteal abscess. The radiogram Fig 6A was taken three months after operation and shows a sequestrum surrounded by recent periosteal bone of great thickness. This was removed and seven months after the first operation—the wound never having ceased to discharge copiously—a further radiogram (Fig 6B) showed that another sequestrum had formed, accompanied by still greater thickening of the femur. So that, after being ill for this length of time, the patient is now faced with the necessity of at least one more operation, will probably have a discharging sinus for several more months, and even at this stage he has a completely ankylosed knee joint.

Another case that came under my notice was one of acute osteitis of the lower end of the fibula which was treated by this method, a subperiosteal abscess being opened and drained. The temperature continued to swing (Fig 7) and the condition of the patient gave rise to much anxiety. Treatment by the Bipp method was then undertaken with a striking result. The chart shows how the temperature came down, pain was abolished, and the patient immediately improved, being quite a different person after his second operation. No further operation was necessary for the removal of sequestra.

It seems that the institution of the Bipp method of treatment at least aborted what would otherwise have been a lengthy illness and may have prevented an even more serious result.

Drilling the bone—Since Starr published his well known paper in 1922, this method of treatment has been widely adopted, although he himself appears to reserve it for cases where no subperiosteal abscess is present. It is one method of bone drainage therapy and, as such, does not appear to be adequate. Even inadequate drainage, however, is better than none at all. It will probably have been the experience of most surgeons that drill holes become occluded almost immediately with purulent debris or granulations and that it is expecting too much of them to drain efficiently even if the dressing, as advocated by Sir John Fraser (1934), consists of gauze soaked in a fluid which theoretically keeps the discharge in solution as it tracks up through the holes in the bone. With this method of treatment the illness is also liable to be prolonged, for judging from the writings of both Starr and Fraser it is not uncommon for sequestration to take place. Starr (1927), for example, reports 207 cases and states that, of these, 26 healed completely without sequestration. These figures mean that sequestra formed in no less than 88 of every 100 cases, a huge percentage and one that compares very unfavourably with that reported above of the Bipp method. Simple trephining of the bone, sometimes carried out, appears to be very little more efficient as a method of drainage than that of multiple drill holes.

While discussing this method of treatment, the following case of acute osteitis of the lower end of the femur is interesting.

When operation was performed a large subperiosteal abscess was found, two large ($\frac{1}{2}$ in) drill holes were made in the bone but no pus was found. Gauze drainage was provided and the wound left open. The temperature chart of this case is shown in Fig 8. A few days after operation the remittent type of temperature indicated a purulent focus that was either not draining or doing so inadequately, while the thigh had become much swollen. The treatment of this case by the Bipp method was undertaken 12 days after the first operation. The wound at this time was about 2 in wide and at operation both drill holes were found plugged with inspissated pus. Gutting of the bone revealed the cancellous tissue of the distal 3 in of the diaphysis to consist almost entirely of pus. Two weeks later the Bipped gauze was removed and the cavity in the bone filled with a pedicled muscle graft from the vastus externus. The rise in temperature

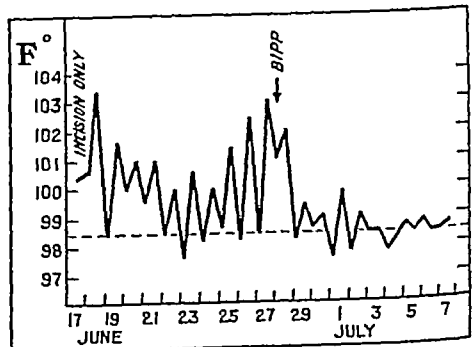


FIG 7—Temperature chart of case of acute osteitis of lower end of fibula treated first by incision of soft tissues and later by Bipp method

midway between the times of the last two operations was due to the development of a subcutaneous pyemic abscess near the left axilla. After the last operation there were two rises of temperature which were not explained, for the patient did not complain of any pain or malaise and examination of the wound and urine showed both to be satisfactory.

Guttering of the bone—This procedure appears to have been brought into disrepute largely through the false impressions about it appearing from time to time these indicating either a lack of appreciation of its proper use or excessive zeal on the part of the operator. Platt (1928) states that upon the conception now proved erroneous by the work of Starr that infection extends along the interior of the bone *pari passu* with the subperiosteal spread the treatment of acute osteitis by the gutter operation was based. While this may be true, it is pointed out at once that the basis of this operation as used in the Bipp method has nothing to do with the question of subperiosteal versus internal spread of infection but has for its foundation the pathological fact that the infection of the bone begins as a small focus which can and should be removed and that the most efficient way in which this can be done is by the use of the gutter operation. Platt further states that where a long gutter has to be made owing to extensive spread of infection this will imperil the viability of the shaft as a whole, that it must tend to add to the amount of necrosis already determined by vascular obliteration and that in bones with a considerable subcutaneous surface the gutter has the disadvantage of leaving an avascular adherent scar. Such anti-gutter propaganda well summarised by Platt has gained much credence and done a great deal to injure the reputation of this operation. In reply to it I would say that the first two statements have not been borne out by my personal experience and that the third describes a condition which can be largely avoided. In 3 of my cases of acute osteitis a gutter

the gutter operation as used in the Bipp method of treatment. In the first place the size of the gutter should be such as to permit of the removal of the infected tissue and no greater. Hence if a gutter only 1 in long is sufficient for this purpose no further increase in its size is necessary or justifiable. There seems no doubt that in times past many gutters have been made indiscriminately without

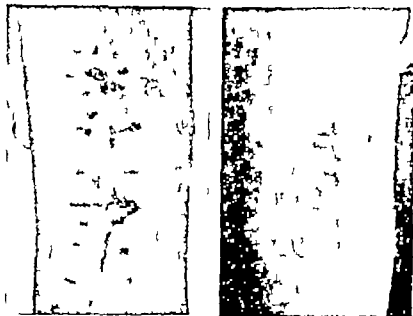


FIG. 9.—Same case as in Fig. 8. W and one month after the institution of Bipp treatment. It is healed except for two small areas from which there is a little discharge.

FIG. 10.—Acute osteitis of upper end of tibia. Wound three weeks after filling of cavity with free fat graft. Wound healed by first intention. Compare with Fig. 9.

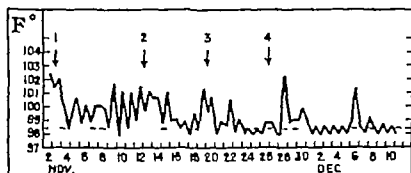


FIG. 11.—Temperature chart of case of acute osteitis of lower end of femur treated first by drilling of bone and later by Bipp method. See text.

over 7 in long necessitating opening into the medullary cavity had to be made in order to reach the limit of the spread of infection. In none of these cases was the viability of the rest of the shaft impaired and there was no sequestrum formation. Where a long gutter has to be made in a bone with a considerable subcutaneous surface if the cavity is allowed to fill up by granulation tissue then an adherent avascular scar will form (Fig. 9) but by using a pedicled muscle graft or free fat graft as described previously a satisfactory scar will be obtained (Fig. 10). Fraser (1934) states that he has abandoned the gutter operation because it did not appear to afford more efficient drainage than that provided by the method of multiple drill holes while the trauma necessarily lessened the reaction and encouraged sequestrum formation. With the first statement I am unable to agree having seen several cases similar to that described in the last paragraph while my answer to the second is to be found in the nearly complete absence of sequestration in the present series of cases.

It would be well, at this point to emphasise certain features which must be borne in mind when performing

any regard to the size of the infected focus with consequent infection of healthy tissue and that this accounts in no small measure for the bad results obtained. Secondly the idea that the gutter operation is synonymous with the opening up of the medullary cavity is an appalling misconception that must be corrected for to do this unnecessarily is asking for trouble and at the same time it indicates ignorance of both the fundamental pathology on which the operation is based and of the technique of its performance.

Furthermore it should be pointed out that acceptance of Starr's contributions to the pathology of acute osteitis in no way contra-indicates the performance of the gutter operation provided this is done in the manner already described and not indiscriminately. The essential difference between the Starr and the Bipp methods of treatment is that while the former seeks to drain the bony focus of infection it is the aim of the latter to remove the focus. The advantages to be gained by removal as opposed to drainage have already been discussed and ample proof of their practical significance is demonstrated by the excellent results obtained in the present series of cases.

Fig. 11 illustrates the results obtained by the Bipp method. They are radiographs from a case of acute osteitis of the lower end of the femur taken one month, six months and fourteen months after operation. The cavity referred to previously under the heading "Length of stay in hospital, the wound being allowed to heal by granulation and the patient leaving hospital 7 days after his admission with the wound completely healed. The cavity of moderate size formed by the guttering of the bone is well shown in Fig. 11a. At the end of six months (Fig. 11b) it is seen to be much smaller while after fourteen months (Fig. 11c) it has been

completely obliterated by sclerosed bony tissue, the structure of the bone itself being almost normal. No sequestrum formation occurred and there has been no thickening due to the formation of new periosteal bone. These radiograms should be compared with those in Fig 6.

Winnett Orr method of treatment—This is placed under a separate heading because, owing to Orr's



FIG 11.—Case of acute osteitis of lower end of femur treated by Bipp method. Radiograms taken one month, six months, and fourteen months after operation. Note absence of bony thickening, gradual obliteration of cavity, and restoration of bony structure almost to normal. See text and compare with Fig 6.

publications (1927) it has become known by his name and seems to have been accorded the status of one which apparently differs from any other. Since, however, it consists of the gutter operation, the treatment of the wound with alcohol followed by iodine, the packing of the wound with vaselined gauze, and the immobilisation of the affected part, its similarity to the Bipp method of treatment becomes at once apparent. At the time, towards the end of the late war, when Orr was formulating his method of treatment, the Bipp method was already established and widely practised in the British Armies. While the principles of this method are the same as those governing the Bipp method—namely, the removal of the bony focus of infection, the use of an antiseptic and immobilisation, and it has the same advantage of obviating the necessity for frequent dressings—yet it is different in one or two important details. In the first place, the iodine as used by Orr will be absorbed in a very short time and no further supply will be available under his method of treatment. The use of Bipp, on the other hand, results in a continuous supply of nascent iodine to the tissues as long as the paste is present in the wound. Secondly, anyone who has had experience of the Orr method need not be reminded of the offensive smell which develops and which makes its use so objectionable. It will be seen, therefore, that the Bipp method of treatment possesses definite advantages over the Orr method in that it is cleaner, more pleasant to use, and is a more adequate means of arresting the spread of infection.

Diaphysectomy—Of this operation I have had no personal experience. Mitchell (1928) reports a series of 13 cases with only 1 death, which indicates that the operation need not be associated with a

forbidding fatality rate, although he does not mention which bones were treated in this manner. Apart from the radical nature of the operation, one objection to it that will always carry much weight is the lack of guarantee of regeneration, the partial or complete failure of which in most of the long bones would lead to considerable deformity and disability. In the rare advanced case in which the diaphysis is found lying loose under the periosteum it could easily be removed but with its removal there would be taken away the best means of ensuring the essential thick involucrum, for the presence of necrotic bone acts as a stimulant to the formation of new bone by the periosteum. The fibula is the only long bone where the question of regeneration does not assume such paramount importance, and four cases of successful total diaphysectomy for acute osteitis of this bone have been reported by Hamilton Bailey (1929). It is felt, however, in view of the results that can be obtained by the more conservative Bipp method of treatment, that diaphysectomy appears to be an unnecessarily radical procedure.

Carrel-Dakin solution—One cannot omit from a discussion of the various methods of treatment of acute osteitis the mention of Carrel-Dakin solution since many bony cavities, the result of the gutter operation, are treated with this antiseptic. It has the advantage of being a more powerful antiseptic than Bipp, but it is very soluble, the effect being so transitory that it is necessary to renew it at frequent intervals. To ensure this renewal special apparatus is necessary, this in its turn requiring attention, the dressings are continually wet, sometimes giving rise to severe irritation of the skin surrounding the wound unless precautions are adopted, and some individuals have a decided distaste for its pungent odour. Bipp, though less powerful, is able to ensure a continuous supply of nascent iodine without requiring renewal for days or even weeks, no special apparatus is necessary for its application, there is usually little or no discharge, and there is no associated smell to upset the patient or his attendants, these features, in my opinion, representing distinct advantages rendering the use of Bipp preferable to that of Carrel-Dakin solution.

Summary and Conclusions

Acute osteitis is a serious disease commonly associated with a high mortality and much subsequent morbidity.

The term "osteitis" is used as meaning the inflammation of any or all of the constituent parts of the bone, and such terms as "osteomyelitis" and "periostitis" are considered superfluous as well as having the disadvantage that they tend to denote separate diseases.

It is important to realise the fact that the disease begins as a small, delimited focus of infection in the cancellous tissue of the metaphysis, for this focus can be completely removed, and that its removal constitutes the rational treatment. While the development of the bony focus of infection presupposes a septicæmia to be already present, this septicæmia must be mild since it gives rise to no symptoms as such. The general symptoms that point to a blood stream infection appear only after the development of the bony focus. In consequence of this sequence of pathological events it is suggested that the severe systemic infection seen in acute osteitis is due to a reinfection of the blood stream from the bony focus, a view that calls for the removal of that focus at the earliest possible moment.

Stress is laid on the necessity for diagnosis in the early stage of the disease—that is before complications due to the spread of infection have occurred. The triad of a *continuous pyrexia intense pain* of sudden onset over the metaphysis of a long bone and exquisite *tenderness* on palpation of the same region associated with a *polymorphonuclear leucocytosis* are the clinical features that appear early and establish the diagnosis.

A description is given of the characteristics of bismuth iodoforn paraffin paste, including its formula, bacteriological and chemical actions.

The principles governing the Bipp method of treatment of acute osteitis and the technique of its performance are described followed by a synopsis of 21 personal cases treated by this method during the past six years. Two cases died giving a fatality rate of 9.5 per cent. one of the lowest on record. Complications were few and the average period of hospitalisation short. The late results concerning growth and function were excellent and a striking feature was the almost complete absence of sequestration. One case is described of recurrence three years after the initial illness.

The various methods of treatment of acute osteitis in use at the present time are discussed in some detail.

In the Bipp method of treatment of acute osteitis the surgeon has at his disposal one for which the following claims are made—

- (1) It has a low mortality rate
- (2) The technique is relatively simple
- (3) It avoids the necessity for frequent dressings
- (4) The dressings themselves are painless a consideration of no small moment in children
- (5) It enables the surgeon to exercise personal supervision of the case instead of delegating this important duty to other people as when frequent dressings are necessary
- (6) It is clean to use and there is no unpleasant associated odour
- (7) No special apparatus is required
- (8) Little or no sequestration occurs thus avoiding the formation of chronic sinuses and the necessity for secondary operations
- (9) Wounds heal in a comparatively short time thus avoiding a lengthy period of hospitalisation and the interference with function so liable to follow a protracted illness involving a limb
- (10) The late results concerning growth and function are excellent

It is considered that the advantages enumerated above to be gained through the use of this method of treatment of acute osteitis merit its wider recognition and adoption.

REFERENCES

- Anderson L. G., Chambers H., and Goldsmith J. N. (1917) *Lancet* i 531.
 Bailey H. (1909) *Brit. J. Surg.* 17 611.
 Fraser J. (1934) *Brit. med. J.* 2 679.
 — *Ibid.* p 272.
 Holman C. C. (1931) *Lancet* 2 887.
 Lloyd E. (1905) *Proc. R. Soc. Med.* 21 137.
 Mitchell A. (1912) *Ibid.* 21 137.
 Morrison, R. (1918) Oxford War Primers London (1918) *Surg. Gynec. Obstet.* 40 612.
 Ogilvie W. H. (1925) *Proc. R. Soc. Med.* 21 1327.
 Orr H. W. (1907) *Surg. Gynec. Obstet.* 45 416.
 Platt H. (1906) *Proc. R. Soc. Med.* 21 13.
 Pryor, L. N., and Pain, A. B. (1932) *Brit. J. Surg.* 20 519.
 Starr C. L. (1921) *Arch. Surg.* 4 267.
 — (1927) in *Law's Practice of Surgery* vol. 3.
 Tyrrell-Gray H. (1931) *Brit. med. J.* 2 72.
 Wakeley C. P. O. (1932) *Ibid.* 2 5.
 Williams G. (1931) *Proc. R. Soc. Med.* 23 817.

LEFT INFRAMAMMARY PAIN

A METABOLIC INVESTIGATION

By K. SHIRLEY SMITH M.D. B.Sc. F.R.C.P. Lond.
 PATHOLOGIST TO CHARGING CROSS HOSPITAL AND TO THE CITY OF LONDON HOSPITAL FOR DISEASES OF THE HEART AND LUNGS

A. STEPHEN HALL, M.D. Camb. M.R.C.P. Lond.
 FORMERLY PHYSICIAN TO THE ROYAL CHEST HOSPITAL AND

JOCELYN PATTERSON M.Sc. Ph.D. St Andrews
 CHEMICAL PATHOLOGIST TO CHARGING CROSS HOSPITAL

THAT pain in the centre of the chest or over the left mammary region should suggest heart disease is not unnatural. Indeed many such pains are undoubtedly due to heart disease. It is usually easy to recognise for example the pain of effort angina with its relation to exertion and the prolonged pain of coronary thrombosis. Similarly pain due to acute pericardial disease or to aneurysm is likely to be traced to its true source by careful investigation. There is however another variety of pain over the heart which is commonly called left inframammary pain. It is rather sharply distinguished from the others by its situation roughly over the apex beat its independence of exertion and its good prognosis. In these patients the pain is often the solitary suggestion of heart disease and on examination none of the ordinary evidence of heart disease such as cardiac enlargement arrhythmia valvular disease or high blood pressure is found. The subjects of such pain are usually women suffering from chronic anxiety imagining that they have heart trouble and indeed as the pain is over the place where the heart may be felt beating what more natural supposition than that it is somehow associated with the heart? Yet because of the absence of features of the ordinary recognised heart disease because the pain is unlike those known to be associated with cardiac pathology and because the psychological state of the patient is sometimes abnormal this symptom of left inframammary pain has been consistently dismissed by physicians as "functional."

It may be profitable to consider more closely what is meant by this term. It may mean that symptoms are present and related to disturbances of physiological function which are perhaps not recognisable by the methods at our disposal and which at any rate are not sufficiently gross to be classed as pathological. On the other hand it may mean that symptoms are present that these are unrelated to morbid or even physiological deviation and that the source of the symptoms is psychogenic. The term functional is all too frequently used by clinicians at the present day to embrace both of these groups—the truly functional and the psychogenic. The use of the word functional in connexion with left inframammary pain is fully suggestive to the physician some infirmity in moral fibre in his patient and a lack of significance in the complaint; he therefore feels both unworthy of his attention and the patient is sent away a wreck of a sound heart and the prospect of a long life. Yet the pain persists and has somehow or other to be borne. It is not possible that the patient was originally right in her fears that there is something wrong with the heart and that our methods of examination are so crude as only to discover the gross or forms of disease. May it not be that some disturbance of nutrition as opposed to structural damage is responsible for the production of pain and that there exists in these patients some mechanism correlating their anxious state with metabolic disturbance and pain?

That there is some relationship between a person's psychological structure and the disease to which he is liable there can be little doubt, as witness the observations of Draper (1924), although it is unknown whether that relationship is endocrine or biochemical. There is the excitable temperament of the rheumatic child, the anxious pessimistic man who develops peptic ulcer, and the cheerful optimistic woman who gets gall stones. These associations are so common that they cannot be fortuitous but the links remain to be discovered.

It was in this frame of mind that we began to study patients afflicted with left inframammary pain, subjecting them to clinical, biochemical, radiological, and electrocardiographic investigations, and attempting to find some abnormality that might indicate the link between physical and mental fatigue and the symptom complex of left inframammary pain. In this paper we record the results of our investigations and suggest a working hypothesis of the mechanism of the syndrome.

THE CLINICAL FEATURES

Pain below the left breast is a symptom, common enough in women, which has been recognised for many years and which does not respond to the methods of treatment usually adopted. It differs absolutely from angina pectoris by its lack of immediate relation to exertion. It is situated in its greatest intensity in the neighbourhood of the apex-beat. Frequently the pain is accompanied by liability to palpitation and suspicious (*sighing*) respiration as described by Herz (1910). Associated pain and hyperaesthesia about the angle of the left scapula was first observed by Parkinson (1919). The pain may come on at any time, but is specially apt to occur after physical or mental fatigue. Any exertion that involves stooping or stretching upward with the arms seems likely to produce or aggravate the pain. Characteristically it is a dull ache, but it may be paroxysmal and of extreme severity as described by Gallavardin (1928), the differential diagnosis from spasmodic angina may then present difficulty. Left inframammary pain is not directly relieved by rest. Other symptoms commonly associated are headaches, depression, trembling, and manifestations of vaso-motor instability such as sweating and sensations of heat and cold. In consequence of these the pain is regarded by many physicians as neurotic in origin. In times past it was generally regarded as due to heart disease, and indeed its accompanying phenomena of dyspnoea and palpitations served to emphasise this conception. This pain does commonly occur in heart disease and one of us (Smith 1929) has shown that pain at and below the left breast is a frequent manifestation in congestive heart failure, tending to become more severe with enlargement of the heart and tachycardia. Nevertheless, left inframammary pain occurs much more frequently in patients who have none of the accepted evidence of heart disease, and Baker (1930), in an analysis of 332 consecutive patients at the National Heart Hospital, found this pain complained of in 42.3 per cent of cases with no other evidence of heart disease, and she compiled similar figures in a further series of 266 consecutive patients. Thus a patient with this pain is more likely to have a "normal" heart than not.

EXPERIMENTAL GROUP

The series investigated in the present work comprised 26 patients (all female except 2), who gave left inframammary pain as the main, sometimes the sole, complaint, and who on careful examination by

the usual clinical and cardiographic methods showed no evidence of any recognised form of heart disease. Their ages ranged from 20 to 54. In each instance the patient was admitted to hospital and a very full history was elicited with special reference to the nature, site, radiation and duration of the pain, the associated symptoms, the menstrual cycle, and the presence or absence of factors pointing to anxiety, fatigue, or toxæmia.

Radiological and electrocardiographic examinations were made in each case. An estimation of the fasting blood sugar was made, that is to say, the patient took no food from the evening before until the blood was taken at 7 A.M. Sugar tolerance curves were made in nearly every case, while determination of alkali reserve and the basal metabolic rate by the British Benedict method were made in the majority. Repeated urine tests for acetone bodies were carried out.

Although there are available numbers of statistics relating to the range of the normal fasting blood sugar, it was thought best to study a small series of controls. Accordingly, estimations of fasting blood sugar were made in a group of 11 young women in sound health awaiting various minor orthopaedic operations. Such a group reproduced the condition of hospitalisation of the experimental series and at the same time comprised a number of subjects free from any symptoms or constitutional maladies.

RESULTS

Fasting blood-sugar.—Out of 26 patients—

17	showed	80 mg per 100 c cm or less
11	"	70 mg " " "
8	"	65 mg " " "

In a control series the fasting blood sugars in 11 "normal" female patients had the following values: 98, 89, 87, 85, 85, 82, 80, 79, 75, 73, 71.

Sugar-tolerance curves.—These were obtained in 23 patients. In 9 a peak of 140 mg per 100 c cm or less was found, and in 6 of these the peak was 130 mg per 100 c cm or less. Three curves reached a level of 200 or more. In one of these (peak 230) glycosuria was discovered, in the other two no glycosuria.

Alkali reserve.—Estimations were made in 9 patients and were within normal limits, ranging from 50-77 vols of CO₂ per cent.

Basal metabolic rate.—Investigation of 22 patients, in one of whom it was not possible to obtain a figure.

In 4 patients	it was between	-5% and +5%
In 8	"	+6% and +25%
In 7	"	-6% and -25%

In the remaining two patients values of +28 and +20 were obtained. These patients and some others were regarded as unsatisfactory subjects for the test.

Urine.—Consistently normal in every patient except those two in whom glycosuria was found in association with a reduced sugar tolerance curve.

Body weight.—The patients were with few exceptions spare in build and under weight rather than over weight. This was specially the case in the younger age groups (20-30).

X ray.—Antero posterior telerothograms did not disclose cardiac enlargement or deformity in any case. Generally, the heart was found to be of rather small size.

Electrocardiograms.—The following were regarded as findings that would ordinarily be grouped among normal tracings but which occurred with such frequency among these patients that they have received special attention: (i) T₁ not greater than P₁ in amplitude, (ii) T₂ not greater than P₂ in amplitude, (iii) diphasic T₂ or T₃ with or without (i), or (ii), or (i) and (ii). One or more of these conditions were fulfilled in 16 out of 24 patients. The Figure shows four typical electrocardiograms.

ASSOCIATED FACTORS

- (i) Blood pressures ranged within normal limits
- (ii) Menstrual disturbances or derangements existed

in 14 out of 24 female patients. In 3 of these patients the menopause was in progress (ages between 48 and 54).

(iii) Fatigue in the history—work or special circumstances—in 10.

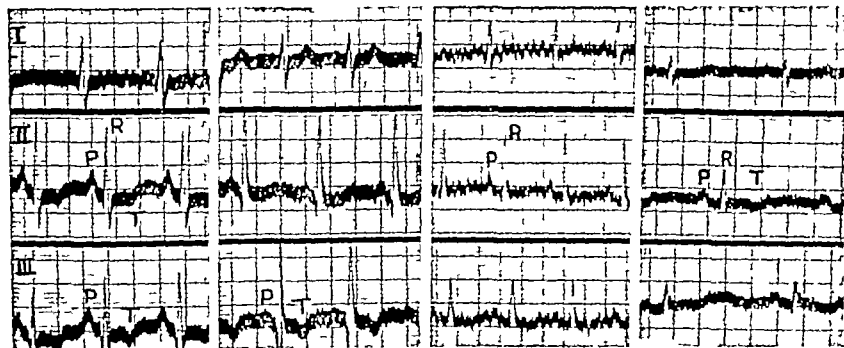
(iv) Anxiety in 18.

(v) Toxic factors such as excess of tea, coffee or tobacco did not appear to be of any importance.

(vi) Indigestion was conspicuous by its absence in the histories.

DISCUSSION OF RESULTS

It will be seen from the foregoing results that the subjects of left inframammary pain show deviations from the normal in two principal directions. First, an abnormality in the sugar metabolism was found in a high proportion of cases and secondly particular types of electrocardiogram were found with considerable frequency.



Typical electrocardiograms of patient subject 1, left inframammary pain but having no organic disease. Left to right: female aged 43, female aged 48, male aged 43, female aged 45.

Sugar metabolism.—No agreement regarding the normal variations of the fasting blood-sugar and the level below which hypoglycaemia may be said to exist is to be found among the various authorities.

Sigwald (1932) regards 90 mg. per 100 c.cm. as the lower limit of the normal, while Peters and Van Slyke (1931) give 70–120 mg. as the normal range. Graham (1933) and Bourne and Stone (1934) suggest 80–120 mg. while Wright (1930) gives 80–100 mg. Hawk (1931) claims that values below 90 mg. are abnormal and Joslin (1933) names 100 mg. as the limiting low value. Wauchoppe (1933) says that 100 mg. is the normal and that hypoglycaemic symptoms may appear at or below 80 mg. Bendall and Plaqueux (1927) after an extensive survey of the subject concluded that a reading of about 90 mg. or below constituted hypoglycaemia.

The discrepancy between these results depends to some extent upon the diversity of methods used for the estimations. Methods such as the one of MacLean and of Hagedorn and Jensen give on an average readings which are 10–20 mg. lower than those which like Lolin and Wu employ tungstic acid filtrates. Whether capillary or venous blood is examined is of practically no moment in fasting blood-sugar determinations.

In our present series of analyses MacLean's method has been used on capillary blood. Our previous experience of this procedure has indicated that the normal range of fasting blood sugar is from 70 to 100 mg. per 100 c.cm. Thus the 11 cases taken for controls varied between 71 and 98 mg. per 100 c.cm. materially covering the normal range. Since in our

experimental series there were 12 patients with a fasting blood of 70 mg. or less it is seen that approximately half our group were hypoglycaemic whether compared to our own standard of the normal or to the widest range of normal variation given by the authorities quoted above. At the same time the fasting blood sugar in the remaining 14 of our patients fell largely into the lower half of the normal range. Sippe (1933) has found fasting blood-sugar values ranging from 65–77 mg. per 100 c.cm. in four patients complaining of left inframammary pain.

Departures from the normal were also found in the sugar tolerance. The curves in our patients tended to be low and showed an unusually early peak, the estimation at the one hour period being lower than at the half hour stage. On the other hand we discovered the presence of unsuspected glycosuria in one

patient and indisputable hyperglycaemia in two others. It is generally accepted that derangement of sugar tolerance in either direction is the outcome of endocrine disease or dysfunction although the nature of the mechanism is far from being thoroughly understood.

Electrocardiograms.—The special features of electrocardiograms taken from our patients related entirely to the ST segments or T waves. The T waves were found usually to be of less amplitude than the I waves of the same lead and were frequently diphasic or inverted (see Figure). Such changes as these have been recorded chiefly in relation to nutritional or toxic disturbances, and the frequency with which they were found in our series has led us to the view that they are here related in some way to the anomaly of sugar metabolism just described. Similar electrocardiographic variations have been found by Taterka (1930) in diabetic coma by Smith and Hocking (1932) in diabetics. Wittgenstein and Menzel (1924) and Haynal (1935) have made similar observations in hypoglycaemia in diabetes, and a flattening of the T waves has been demonstrated in starvation in children by McCullough (1930). It thus seems likely that the underlying factor in all the cases is a nutritional disturbance of the heart muscle due either to a lack of sugar supply or an inability to metabolise sugar.

Comments.—From the foregoing considerations it is clear that there is a possible basis of relationship to connect the two principal abnormalities found in our investigation. A review of the personal literature

in the experimental group brought out clearly facts which have already been established regarding the subjects of left inframammary pain. Fatigue and anxiety appeared to play an important part not only in the production of the syndrome, but also in determining the frequency and severity of the pain. When physical fatigue and emotional stress operated together, as for example in the nursing of a sick relative, the liability to the pain seemed to be especially great.

MECHANISM OF PRODUCTION

The states of anxiety and fatigue, predisposing to and aggravating the pain, are the outstanding associated factors in the syndrome of left inframammary pain. It must be considered whether there is any possible link to correlate mental or physical fatigue with the group of somatic symptoms which are the subject of the present investigation. Many of the physical manifestations of emotion are so much part of everyday life that except in extreme forms they arouse no comment, others are more subtle and may only be observed by the discerning eye, again, some are too slight to be detected by the observer, and it is in this last field of manifestations that explorations by biochemists and physiologists are beginning to bear fruit.

There can be no doubt that the influence of the emotions on the bodily functions is a profound one, and the literature of this subject has lately been exhaustively explored by Dunbar (1935). But it is upon the endocrine system particularly that emotions seem to exert their most direct effects. Thus Bram (1927) found that in 2842 out of 3343 patients with exophthalmic goitre a clear history of psychic trauma as a cause was obtained. Goodall and Rogers (1933) have made similar observations. The deleterious effects of anxiety upon the diabetic is universally recognised, and Cannon (1929) has found glycosuria at times of anxiety in normal animals and men. Again Williams (1912) has remarked upon the action of chronic fear which he believes to play a part in the genesis of hyperthyroidism and hypo-adrenalism, he has recorded cases in which prolonged stress has apparently led to Addison's disease and death, no other condition than suprarenal atrophy being found at autopsy. Marañón (1929) has reported three similar instances. It should be noted in this connexion that low blood sugar and curves of increased sugar tolerance are the rule in Addison's disease. No record of associations between mental or physical stress and pituitary lesions has been disclosed in a search of the articles on the subject.

The substantial body of evidence indicating the concrete effects upon the bodily functions of emotional disturbances has led us to review our own findings in this light. The salient points in our problem were (i) the existence of a group of symptoms of which left inframammary pain was the chief, (ii) the obvious rôle of physical or mental fatigue in producing or aggravating the syndrome, (iii) a condition in which the blood sugar generally tended to fall to abnormally low fasting levels, and in which a state of increased sugar tolerance was found, and (iv) the prevalence among these patients of particular types of electrocardiogram. It seemed to us most likely that the endocrine system must be the intermediary factor here linking the mental state with the physical. Considering in turn the various endocrine organs, there was in the first place nothing in the literature or in our findings to suggest a pituitary anomaly. The thyroid had also to be rejected on several grounds, first, that in thyrotoxicosis a reduced sugar tolerance is found as opposed to the

increased tolerance seen in the majority of our patients, secondly, our patients presented none of the signs of frank or even masked thyrotoxicosis, and thirdly the basal metabolic rate was found to present no significant deviations from the normal. The conclusion that no thyroid element operated in our patients was supported by the findings of Gallavardin (1935), who in a recent investigation of the comparable syndrome of nervous tachycardia found no evidence of abnormal thyroid function.

The thyroid and pituitary being thus excluded, it remains possible that alterations in fasting blood sugar may relate either to pancreatic or suprarenal causes. Since the tendency of alteration is in the direction of increased sugar tolerance, the glandular derangement would be either in the direction of hyperinsulinism or hypo-adrenalism. As no evidence was forthcoming to suggest the presence of primary hyperinsulinism in our experimental group, we have been led to the hypothesis that in the subjects of left inframammary pain a relative hyperinsulinism frequently exists in association with a state of exhaustion or hypofunction of the suprarenal gland. We suggest that left inframammary pain arises in the heart as the cardiac expression of a metabolic derangement that affects the body as a whole. This metabolic derangement is envisaged as the consequence of endocrine dysfunction brought about by emotional or physical stress. It may be argued that if left inframammary pain is of this origin patients with hypoglycæmia should also be subject to this pain. It is true that precordial pain is not common in hypoglycæmia, but it does occur sometimes as mentioned by Sonne (1929) who also observed palpitation in 44 per cent of cases. This author also refers to the fact that serious symptoms may relate to little fall in blood sugar, while in other cases a sharp hypoglycæmia produces no symptoms. And even though left inframammary pain be related to defective bodily and cardiac nutrition it is not necessarily an invariable accompaniment any more than neuritis is to be found in every subject of diabetes. Moreover, the condition of our patients was not exactly comparable with insulin hypoglycæmia, since in the latter an actual hyperinsulinism exists as opposed to the suggested relative hyperinsulinism in left inframammary pain. It has been observed by Ernestene and Altschule (1931) that hypoglycæmia causes an increased load on the heart since the minute volume is increased during the condition, similar observations have been made by Chasanoff (1929). It seems likely that the explanation of exertional dyspnoea accompanying left inframammary pain lies in these facts.

SUMMARY

1 The syndrome frequently known as left inframammary pain is briefly described. Modern conceptions regarding the nature and source of this pain are discussed.

2 An account is given of an investigation into the clinical features and metabolism of 20 patients suffering from the left inframammary pain syndrome, but from no recognised organic disease in any system.

3 It is found that approximately half of the experimental group showed abnormally low fasting blood sugar, even though the figure of 70 mg per 100 c.c. be taken as the lower limit of the normal. Sugar tolerance curves often showed an increased tolerance, the curves reaching an early, and frequently low, peak. On the other hand, in two patients an unsuspected diabetes was brought to light, and in three others hyperglycæmia without glycosuria.

4 The electrocardiogram in the subject of left inframammary pain is found frequently to show certain features hitherto regarded as normal.

5 Examination of alkali reserve basal metabolic rate and heart size by radiography shows no abnormality.

6 The nature and origin of left inframammary pain are discussed. It is suggested that this pain is the cardiac expression of a metabolic derangement that affects the body as a whole. It is further suggested that this disturbance is related to an underlying endocrine imbalance.

REFERENCES

- Baker D. (1935) *Lancet* 1, 1280.
 Bourne, G. and Stone, K. (1929) *The Principles of Clinical Pathology in Practice*. London.
 Bram I. (1917) *Endocrinology* 11, 108.
 Cannon, W. B. (1929) *Bodily Changes in Pain Hunger Fear and Rage*. New York and London.
 Chassanoff M. (1929) *Klin. Wochr.* 8, 931.
 Draper G. (1924) *Human Constitution*. Philadelphia and London.
 Dunbar H. F. (1935) *Emotions and Bodily Changes*. New York.
 Ernest, A. O. and Altschule M. D. (1931) *J. Clin. Invest.* 10, 531.
 Gallavardin L. (1925) *Les Angines de Poitrine*. Paris.
 — (1925) *Les Tachycardies Nervieuses*. Paris.
 Goodall J. S. and Rogers I. (1933) *Med. J. Sec.* 135, 411.
 Graham, G. (1933) *Text book of Medicine*. London.
 Hawk, P. (1931) *Practical Physiological Chemistry*. London.
 Haydon, E. (1928) *Klin. Wochr.* 4, 403 and 1749.
 Hers M. (1910) *Et. Pathol. et med. Wochr.* 35, 7.
 Joslin, E. I. (1925) *The Treatment of Diabetes Mellitus*. London.
 McCullough H. (1920) *Am. J. Dis. Child.* 20, 446.
 Maranon G. (1929) *Siglo med.* 83, 30 (quoted by Dunbar).
 Parkinson, J. (1918) *Lancet* 359.
 Peters J. P. and Van Slyke, D. D. (1931) *Quantitative Clinical Chemistry*. London.
 Sendraill, M. and Planques J. (1927) *Gas Méd. Paris* 100, 1137.
 Sigmond, J. (1925) *L. Hygiène*. Paris.
 Slope G. (1933) *Med. J. Sec.* 135, 392.
 Stalith K. Shirley (1929) *Lancet*, 1, 1080.
 — and Hickling R. A. (1937) *Lancet* 1, 501.
 Sonne G. (1920) *Acta med. Scand.* 24, 223.
 Tetzels H. (1929) *Klin. Wochr.* 8, 1110.
 Watchope, G. M. (1933) *Quart. J. Med.* 26, 117.
 Williams T. A. (1912) *Med. Pr.* 2, 85.
 Wittenstein A. and Mendel B. (1924) *Klin. Wochr.* 2, 1119.
 Wright, B. (1936) *Applied Physiology*. London.

A NEW MACHINE FOR THE SELF ADMINISTRATION OF GAS AND-OXYGEN ANALGESIA IN LABOUR

By ADAM BARR, M.B. Class, F.R.F.P.S. M.O.G.
 SENIOR ASSISTANT TO THE HONORARY PROFESSOR OF MIDWIFERY
 UNIVERSITY OF GLASGOW, VISITING SURGEON TO THE
 GLASGOW ROYAL MATERNITY AND WOMEN'S HOSPITAL,
 VISITING OBSTETRICIAN AND GYNAECOLOGIST TO
 STOBHILL GENERAL HOSPITAL, GLASGOW, AND

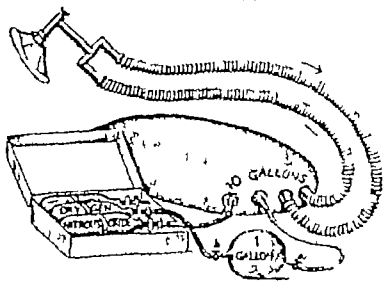
ANDREW TINDAL, M.B. Class
 VISITING ASSISTANT TO THE WESTERN INFIRMARY AND THE
 ROYAL HOSPITAL FOR SICK CHILDREN, GLASGOW,
 AND TO THE GLASGOW DENTAL HOSPITAL

DURING the past few years many attempts have been made in response to a growing demand from all sections of the community to evolve some safe method of producing relief from pain during labour.

In domiciliary practice the majority of women go through the greater part of labour with no mitigation of pain. Most practitioners administer during the second stage of labour intermittent chloroform anaesthesia. Nevertheless this is not the stage at which the patient is most in need of relief. Observation and examination reveal that the most fatiguing and certainly the most painful part of labour is the latter part of the first stage—and it is at this stage that relief is demanded—the pains are increasing in intensity and yet the patient feels that the present stage is not progressing and she can do nothing to help herself. Prolonged intermittent chloroform anaesthesia is obviously because of late dangers inadvisable at this stage and to this must be

added the disadvantages that labour is delayed and the incidence of forceps delivery is increased. Administration of sedative drugs because of their uncertainty of action, a so-called restlessness and possible effect on the child has never been a popular method of relieving pain in domestic midwifery practice.

The community and the profession are indebted to Minnitt who in 1934 devised an apparatus for the self-administration of nitrous oxide gas in air to produce analgesia. Although this has not proved entirely satisfactory in use it has become obvious that future developments in this method should prove the ideal means of producing analgesia in labour. Administration of nitrous oxide gas and



air or oxygen possesses advantages over all other methods in that while it relieves the pain of labour it is in no way dangerous to the mother or the child nor does it prolong labour—the frequency of contractions is not interfered with and the strength of contractions is not diminished. The incidence of instrumental interference therefore should not be increased.

During the past two years we have endeavoured to evolve an apparatus which would fulfil certain conditions which we considered essential if it were to be of value in general practice midwifery. It must (1) be safe and foolproof (2) deliver a fixed proportion of nitrous oxide gas and oxygen (3) be low in initial cost (4) be low in running expense (5) be compact and easily portable (6) have a minimum of moving parts to go out of order and have a mechanism which is easily understood (7) if possible be capable of producing some degree of analgesia at the moments of birth. After much experimenting constructional and clinical we have produced such an apparatus.

Essentially it consists of a rubber bag of 10 gallons capacity. Two tubes enter this on leading, first from a nitrous oxide cylinder and the other from an oxygen cylinder. In order to measure the oxygen a 1 gal rubber bag which has a tap at either end is connected up as in the Figure. Two corrugated rubber tubes lead from the bag to the face-piece—directional valves are fitted so that the gas mixture in the bag is inured through the tube and the expired breath is exhausted into the bag. A valve is incorporated in the face-piece in such a way that when the plunger which keeps the face-piece pressed against the face is released the flow of gas and oxygen is automatically stopped and air only is breathed.

METHOD

The procedure is as follows. All air in the bag is expressed by rolling them flat at the same time depressing the plunger on the face-piece. The tap (4)

proximal to the oxygen bag (capacity 1 gal.) is closed and the distal one (B) opened, and the bag then filled with oxygen. This small bag, which now contains 1 gal. of oxygen, is emptied into the reservoir by opening the proximal tap and squeezing the bag. The tap (A) is then closed. The reservoir, which now contains 1 gal. of oxygen, is then filled to capacity with nitrous oxide to a point just short of stretching the rubber. The tap between the cylinder and the reservoir is now closed. The reservoir now contains approximately 10 gal. of gas—90 per cent nitrous oxide and 10 per cent oxygen.

The apparatus is now ready for use. Whenever the approach of a pain is appreciated, the patient expires to the fullest extent, then placing the face piece over her nose and mouth, presses the plunger valve and takes a long inspiration from the reservoir—the following expiration passes back into the reservoir. She continues in this manner until the contraction is over, when she releases her grip on the plunger and removes the face piece. The apparatus is ready for the next pain. One filling may last from $\frac{1}{2}$ to 2½ hours, depending upon the frequency of the pains. It will be observed that as time passes the reservoir tends to sag. Before it is completely emptied, its contents, now diluted with exhaled air, are expressed by folding the reservoir flatly and depressing the plunger as before. It is then refilled as in the beginning.

The concentration of nitrous oxide permits sufficient analgesia of rapid onset, and the 10 per cent oxygen is sufficient to prevent anoxæmia. The concentration of carbon dioxide in the reservoir never becomes high enough to cause any divergence from the normal rate of respiration.

The apparatus is manipulated by the patient herself, an attendant being required from time to time to refill the bags.

If sufficient relief from pain is not obtained for the actual birth of the head, the nurse or medical attendant may, by applying the face piece continuously with the plunger depressed, obtain adequate analgesia for this purpose. The same procedure will allow of episiotomy or insertion of perineal sutures.

Our experience has been that where the analgesia is begun early enough, the patient becomes so expert in the use of the apparatus and so assured of relief from pain that she frequently sleeps naturally between pains, only waking sufficiently to reapply the face piece at the beginning of the next contraction.

This form of analgesia can be carried on indefinitely, one of our cases lasting over thirty hours with no ill effects.

RESULTS

In order that the degree of analgesia produced by this machine might be accurately estimated, we have adhered to certain standards throughout our investigations. (1) The cases here reported were delivered in one institution where certain nurses were instructed in the use of the machine or, in private practice, by ourselves. (2) In order that the actual relief from pain might be correctly assessed, no preliminary sedative drugs were administered in any case. (3) In each case a record was kept of the effects of the gas noted by the nurse in attendance, and also of the opinion expressed by the patient herself at the time of labour.

A total of 100 cases were treated. Of these 20 were not aware of the birth of the child and voluntarily expressed surprised relief that the labour was concluded. There were 20 patients who were extremely nervous when the treatment began, and 12 of these became calm and controlled, cooperating readily shortly after they realised the effect of the gas. 8 of these 20 cases, however, proved

unsatisfactory, throughout because of a lack of self control or an inability to obey the instructions for using the apparatus—it seemed noteworthy that none of these occurred in our private practice where co-operation was intelligent. After a very satisfactory analgesia in the first stage, 3 multiparæ preferred to dispense with the apparatus during the second stage on the plea that labour was being delayed, although there was no diminution in the force and frequency of the uterine contractions—this seemed to us an argument for the efficiency of the analgesia. The remaining 48 patients had a very good relief from pain although they felt the actual birth of the child. There were 6 cases of forceps delivery for reasons not associated with the analgesia—persistent occipito-posterior position and contracted pelvis—chloroform was administered in these cases for delivery.

There were no stillbirths in the series and no neonatal deaths, and in all the child cried vigorously at birth. At no time was cyanosis observed other than the discoloration which is normal in the downbearing of the second stage of labour.

COMPARISON WITH OTHER MACHINES

In 1935 a committee of the British College of Obstetricians and Gynaecologists reported on an investigation into the use of analgesics suitable for administration by midwives. The records of almost 4000 patients who received analgesia from the Minnitt apparatus (35 per cent nitrous oxide in air) were considered. In 23 per cent of these cases the analgesia was reported as either doubtful or unsatisfactory.

Chassar Moir (1937) has recently expressed his disappointment, which confirms our own experience, at the meagre benefits which this type of machine, delivering 35 per cent nitrous oxide in air, confers, and has shown that the inefficient analgesia results from the inability of many women to inhale a sufficient amount of nitrous oxide before the full force of the uterine contraction is upon them. In his apparatus, pure nitrous oxide gas sufficient for two deep breaths is delivered from a reservoir. In the apparatus here described, 10 per cent oxygen is added to nitrous oxide gas, and the patient is able to obtain sufficient analgesia for even the prolonged and severe uterine contractions which are typical of the second stage of labour, without fear of anoxæmia.

The apparatus is very moderate in price, light in weight (24 lb.), and can be used at a cost of from 3d to 6d per hour. No mechanical adjustments are necessary—the principle on which it operates is obviously simple. (Many nurses and practitioners have expressed to us their feeling of insecurity when working with complicated machines the mechanism of which they do not understand.)

SUMMARY

A new machine for obtaining analgesia by means of nitrous oxide gas and oxygen is described. It is cheap, easily portable, and foolproof in use.

A series of cases is described in which 92 per cent obtained a satisfactory analgesia—in 20 per cent a perfect analgesia.

Less than 10 per cent proved unsuitable—a more or less irreducible minimum with a certain unintelligent and nervous type of patient who is always troublesome with any form of inhalational anaesthesia.

The apparatus is assembled and distributed by the British Oxygen Co., Ltd., Polmadie, Glasgow, and is known as the Tindal Barr Analgesia Apparatus.

REFERENCES

- Ann Rep Brit Coll Obstet Gynaec. 1935 p 30
Minnitt R J (1934) *Lancet* 1, 1278
Moir C (1937) *Ibid* March 13th, p 616

CHEMOTHERAPY OF STREPTOCOCCAL INFECTIONS WITH *p*-BENZYLAMINO BENZENE SULPHONAMIDE

By B A PETERS M.D. Camb. D.P.H.

MEDICAL SUPERINTENDENT TO THE HAM GREEN HOSPITAL AND
BAXTERIANUM, BRISTOL AND

R V HAYARD M.R.C.S. Eng.

ASSISTANT RESIDENT MEDICAL OFFICER, HAM GREEN HOSPITAL
AND BAXTERIANUM, BRISTOL

During the past winter 150 cases of scarlet fever 47 cases of erysipelas and 18 cases with other types of streptococcal infection were treated with Prospectasin (*p* benzylamino benzene sulphonamide) an ample supply of which was placed at our disposal by the makers Messrs May and Baker

SCARLET FEVER

In the scarlet fever test group no antitoxic serum was given. As controls 150 alternate cases were treated with serum when considered necessary (58 cases) and the remainder expectantly. The dose given was 0.75 to 6 g. per day according to age by mouth in tablet form divided into four hourly doses. The full dose was given for two days, and half the quantity for another two to four days according to the course of the illness. The maximum quantity given in all to any one patient was 22.5 g. The results are shown in the Table.

It will be observed that in the test series, 53 (35 per cent.) developed one or more of the complications tabulated whilst 84 (56 per cent.) of the control cases showed some complications. This difference is statistically significant. The sum of the individual complications is almost identical but the complications in the test series occurred in fewer patients. The mean duration of the primary fever from onset to termination was twelve hours longer in the test series. Since antitoxin was administered to a third of the control series this might be expected for antitoxic serum undoubtedly reduces pyrexia. Our

results would suggest therefore that the drug has some effect on the invasive side of this streptococcal infection and the results might be better if the drug could be given earlier. If spaces such as nasal sinuses the middle ear or bone are infected the organism is probably less accessible to the drug. Possibly a combination of drug and serum would be more effective and this is now being investigated.

ERISIPELAS

The results here were very striking. A series of 47 cases of erysipelas of varying severity from mild to very severe, was treated with similar doses of the drug. The youngest patient was four months three were 70, 81 and 87 respectively. In 31 cases the temperature was normal within twenty-four hours in 12 within forty-eight hours in 3 within seventy-two hours, and in 1 only did pyrexia continue until the fifth day. The spread of the disease was arrested within twenty-four hours in every case. Two developed relapses ten days after the primary attack which responded at once to further doses of the drug. All the cases made satisfactory recoveries even the aged ones.

OTHER STREPTOCOCCAL INFECTIONS

In 15 severe cases of tonsillitis notified as diphtheria there was recovery within forty-eight hours of treatment with the drug.

In one case of puerperal sepsis showing signs of early involvement of the broad ligament which gave a pure growth of hemolytic streptococcus from the cervix the temperature settled within eighteen hours and the patient made an uninterrupted complete cure with rapid resolution of the infiltrated broad ligament.

One very ill patient with cellulitis involving the fauces arising from an impacted wisdom tooth lost his fever within seventy-two hours and recovered.

In one case of influenza pneumonia with a turbid pleural effusion from which a pure growth of hemolytic streptococci was cultured the effusion dried up after two aspirations following the administration of the drug and the patient recovered. In our former experience such effusions invariably became purulent and necessitated operation for cure.

TEST SERIES OF SCARLET FEVER CASES TREATED WITH PROSPECTASIN

Cases showing complications

CONTROL SERIES (46 CASES RECEIVED ANTITOXIC SERUM)

Cases showing complications

AGES	0-5	6-10	10-15	15-20	Over 20	All ages	0-5	6-10	10-15	15-20	Over 20	All ages
Cases	27	7	24	9	18	100	28	67	37	9	13	160
Cases with complications	12	25	8	2	6	53	14	44	16	4	6	84
Mean day of disease on admission	1	2.4	2.6	1.6	2.3	2.3	1.7	2.9	3.3	1.4	2.5	2.8
Mean duration of pyrexia after admission	3.2	3.6	3.8	3.1	3.2	3.3	3.0	2.2	2.6	3.4	3.3	2.3
Adenitis	9	17	2	1	—	29	10	8	6	2	1	—
Otitis	5	5	—	—	1	11	2	4	4	—	—	10
Secondary tonsillitis	2	2	1	1	3	9	1	—	—	2	3	6
Endocarditis	1	2	—	—	—	3	3	4	—	1	1	9
Rheumatism	—	—	1	—	2	3	—	4	4	—	2	10
Arthralgia	1	8	3	—	—	12	5	4	—	2	3	19
Nephritis	—	3	2	1	—	6	—	4	1	—	—	5
Mastoiditis	—	1	—	—	—	1	—	1	—	—	—	1
Died	—	—	—	—	—	—	1†	11	—	—	—	—

1 case of nephritis developed uremia

† Abdominal pain died after exploratory laparotomy following perforation of the appendix

TOXIC EFFECTS

One child with erysipelas developed a macular rash, two very fat women complained of nausea and vomited once, no case showed any cyanosis or clinical signs suggesting sulphæmoglobinæmia. It seems, therefore, that the drug produces few toxic symptoms in the doses we gave and is well borne at all ages.

SUMMARY

The administration of prosectasine to scarlet fever patients reduced the number of patients having complications from 56 per cent. in the control series to 35 per cent. The drug seems to affect chiefly the invasive stage and results might be better if it could be given earlier.

In erysipelas the spread of the disease was arrested in 24 hours in all of 47 cases. In 31 cases the temperature was normal within 24 hours and in a further 12 within 48 hours. A similar result was seen in other types of streptococcal infection.

SOME OBSERVATIONS ON A CASE OF PULMONARY OEDEMA

BY GEORGE GRAHAM, M.D. Camb., F.R.C.P. Lond.

PHYSICIAN, ST BARTHOLOMEW'S HOSPITAL, AND

RONALD BURN, M.R.C.S. Eng.

WE have made two observations on a patient with pulmonary oedema which seem so important that we are recording them now, as it may be long before we have the opportunity of making detailed investigations on another patient with this condition.

The patient, a woman aged 64, has been seen at intervals by one of us (G.G.) since 1925. In that year she developed the symptoms of a mild toxic goitre, and was treated by Sir Thomas Dunhill with rest and iodine. Glycosuria and hyperglycæmia were also present at that time, and were treated with dietetic restrictions and insulin. The symptoms abated, and after two to three years did not cause any further trouble. The diabetic condition improved greatly with insulin, and she was able to take 180 g. of carbohydrate without insulin in 1928. Since then the diabetic condition has become worse and in January, 1936, she needed 18+16 units for a diet containing 130 g. of carbohydrate. At that time she was complaining of lassitude and had a slight degree of pyrexia. No cause for this fever was discovered and the temperature gradually decreased and the symptoms abated. In March she was again feeling unwell with slight pyrexia and then had an acute attack of *B. coli* pyelitis, which lasted for five weeks. An intravenous pyelogram showed that she had a large cyst of the kidney, which was thought to be congenital. The *B. coli* infection was at first treated with alkalis and later with mandelic acid. The symptoms were quickly relieved with mandelic acid but it was not until August that the urine was rendered sterile.

Her general health had greatly improved, but she was still easily tired, and was only up for about five hours in the day. She had occasionally noticed a little wheezing and tightness of the chest when falling asleep.

On Dec. 1st, 1936 she had a slight coryza, and on Dec. 4th at midnight a feeling of tightness of the chest. This was followed at once by an acute attack of pulmonary oedema. She became ash grey in colour, P 140, R 36, B.P. 180/100. Many râles were heard over both lungs, but there was little expectoration. She was given at intervals injections of Asthmolyan 1 c.cm., atropine sulphate gr. 1/100, Coramine 2 c.cm., and atropine gr. 1/150. The acute attack lasted about two hours and she gradually recovered. She was seen two days later by Sir Maurice Cassidy, who agreed that the attack was one of acute pulmonary oedema. The electrocardiogram was quite

normal. She was kept in bed for 4 weeks but was then allowed to resume her ordinary convalescent life. She still had a slight pyrexia (99-99.5° F.). Blood pressure was 160 to 180/80, hæmoglobin, 82 per cent. colour index, 0.7, red cells, 5,600,000, and white cells, 23,000.

On Feb. 6th, 1937, she had another acute attack which started suddenly at midnight. The respiration was 40, pulse 144. Many râles were heard all over the lungs and there was again little expectoration, but she vomited several times. She was given at intervals coramine 2 c.cm., morphine gr. 1/6, atropine gr. 1/100, coramine 2 c.cm., atropine gr. 1/150. The attack passed off in about 2 hours. She was very unwell the next day, vomiting several times and passing a great deal of sugar in the urine, and was seen by G.G. on this account. The following were the results of examinations made of the blood: sugar, 230 mg. per 100 c.cm., urea, 52 mg. per 100 c.cm., alkali reserve, 63.5 vols. (Dr H.E. Archer).

The blood urea had been estimated several times during the previous illness and was usually between 32 and 36 mg. per 100 c.cm. The rise to 52 mg. suggested that the kidney might have failed because of the acidæmia which was probably present during the acute attack of dyspnoea. As both the attacks started so suddenly the possibility of her being sensitive to some substance was considered. Her rooms were always full of flowers, but no unusual flower had been brought into the rooms in the last few days.

A week later the general condition was better. The blood urea was 32 mg. per 100 c.cm. and the diabetic condition was under much better control with 22+23 units of insulin. The blood pressure was 170/80. The patient was allowed to get up after tea on this day, and while walking in her room complained of a tight sensation in her chest. She was put to bed at once and given, at 5.50 p.m., morphine gr. 1/2, atropine gr. 1/50, adrenaline 0.5 c.cm. In spite of this treatment the symptoms developed rapidly, and when she was seen by R.B. at 6.5 p.m. was in great distress. She was given, at 6.5, coramine 1.7 c.cm., at 6.20, morphine gr. 1/6, atropine gr. 1/100, at 7.10, atropine gr. 1/100. The blood pressure was 200/80, a rise of 30 mm. from the morning. The pulse rate was 140 and feeble, and the respiration 46. Moist râles were heard all over both lungs. During the next one and a half hours she vomited two or three times, bringing up a good deal of fluid. Two hours after the onset she was seen by G.G. The attack was then passing off, although she was still very ill. The respiration was 40 and the pulse 140, moist râles were heard all over the lungs. Ten c.cm. of blood was collected at this stage for analysis. An injection of adrenaline 0.5 c.cm. was then given subcutaneously, after ascertaining that the point of the needle was not in a vein by first withdrawing the plunger of the syringe. Ten minutes later the breathing was quieter and she said she felt better. The blood pressure at this stage was 170/100, pulse rate 144. Half an hour later another 0.5 c.cm. of adrenaline was injected, using the same precautions and the condition continued to improve. An hour later she was well enough to be left although the pulse was still 120 and the blood pressure 170/80.

When the estimation of the blood-sugar was made that night it was noticed that the blood flowed up the pipette with difficulty. This condition had been observed before in a case of diabetic coma (Graham, Spooner, and Smith 1926) and a week previously in a case of severe vomiting after influenza (G.G.). The hæmoglobin was estimated at over 130 per cent. on a Sahli apparatus, and the next day by Dr H.F. Brewer using a standard Haldane apparatus, at 135 per cent. When the blood had stood for a while the amount of plasma was very small compared with the number of red cells, but a hematocrit estimation was not made. The alkali reserve was 49 vols., blood urea was 36 mg. per 100 c.cm., and blood sugar 260 mg. per 100 c.cm. The hæmoglobin had been 82 per cent. in January and two days after the attack was 80 per cent.

DISCUSSION

The two observations to which we wish to draw attention are the rise in the blood pressure and the increase in the hæmoglobin percentage, as we believe they may throw light on the cause of the condition.

One hypothesis regarding the etiology of pulmonary oedema is a failure of the left heart and this is supported by the experiments of Welch (1878). He showed that partial obstruction of the aorta caused oedema of the lungs. The rise of the blood pressure in the brachial artery in our case and the statement by Hamman (1934) that the attacks are often preceded by, or at least accompanied by a marked rise of blood pressure, a so called blood pressure crisis, shows that a failure of the left heart in the ordinary sense does not cause the attack. The high blood pressure might be associated with some obstruction distal to the brachial artery. Such an obstruction occurs in wound shock but pulmonary oedema is not a feature of this state. This evidence suggests that the left ventricle and presumably the left auricle are not to blame.

The only structures between the lungs and the left auricle are the intra and extra pulmonary veins. A contraction of these veins somewhere between the lung capillaries and the left auricle would make the return of the blood to the left auricle very difficult and would cause an outpouring of fluid into the alveoli of the lungs. All those who have made experiments on the pulmonary circulation of animals have found that any interference with the pulmonary veins leads to the early onset of oedema of the lungs. The outpouring of fluid into the lungs would deprive the blood of plasma and explain the rise in the percentage of hemoglobin from 80 to 135 in the peripheral circulation in our case. The blood would become much more viscous and be more difficult to drive round the circulation and cause a rise in the blood pressure at first. Another point in favour of this hypothesis is the improvement in the clinical condition which was noticed after the injection of adrenaline. This was given with the idea of relieving any spasm of the bronchi which might be present and thus easing the breathing. The improvement may have been due to another cause. In recent years many experiments have been made on the pulmonary circulation but they are difficult to carry out and the results are not easy to interpret. Gaddum and Holtz (1933) made their observations on lungs which were not ventilated but were perfused at a constant pressure. Adrenaline caused an increase in the outflow from the lungs in five out of ten cases and a decrease in two cases. Alcock Berry and Daly (1935) who ventilated the lungs, showed that a minimal effective dose of adrenaline generally caused an increase in the venous outflow with little or no change in the pulmonary artery pressure. Larger doses tended to raise the pressure considerably without causing a comparable increase in outflow.

We have recorded these observations in the hope that others who have the opportunity may make extended observations on this condition. If the following routine were adopted our hypothesis could easily be proved or disproved.

(1) An injection of morphine tartrate gr $\frac{1}{4}$ should be given at once since all observers seem to agree on its value.

(2) The collection of 1 to 2 c.cm. of blood in an oxalate tube. This should be done as soon as possible and repeated every 15 to 30 minutes until the attack ceases. The hemoglobin hematocrit value red and white cells should be estimated in each sample.

(3) The estimation of the blood pressure at frequent intervals.

(4) The injection of adrenaline 1 c.cm. subcutaneously. The plunger should always be withdrawn to make certain that the point of the needle is not in a vein.

If the attack is not very serious it will probably be sufficient to repeat the injection every 15 or 30 minutes until the attack is over. If the attack is very severe the dose should be increased to 2 c.cm. and perhaps given at more frequent intervals, but we have not sufficient data from our one case to determine the point.

REFERENCES

- Alcock, P., Berry, J. L. and Daly, I. de Burgh (1935) *Quart. J. exp. Physiol.* 25 389.
Gaddum, J. H. and Holtz, P. (1933) *J. Physiol.* 77 139.
Graham, G., Spooner, E. T. C. and Smith, W. (18 6) *St Bart's Hosp. Med. Rep.* 62 65.
Hamman, L. (1934) *Oxford Medicine New York* 2 pt 1 p 57.
Welch, W. H. (1878) *Virchow's Arch.* 72 375.

ACUTE ASCENDING FLACCID PARALYSIS

By J SHAFAR, M.B. Glasg. D.P.H.

RESIDENT MEDICAL OFFICER WEST END HOSPITAL FOR NERVOUS DISEASES, LATE HOUSE PHYSICIAN TO THE HOSPITAL OF ST JOHN AND ST ELIZABETH, LONDON

Cases of acute ascending paralysis are sufficiently rare to merit individual publication. Moreover differences exist between authorities as to the correct classification of these cases.

Landry in 1859 published a report of a patient in whom there was acute flaccid paralysis beginning in the periphery of the lower extremities and which spread rapidly upwards involving the arms, trunk and respiratory muscles, death ensuing from respiratory failure. No objective sensory changes were present. Examination of the spinal cord and brain failed to reveal any gross abnormality macroscopically or microscopically. The term Landry's paralysis has since then been used to describe such cases.

Giving the name of Landry's paralysis to all types of acute ascending paralysis of a lower motor neurone variety by some and its limited use by others has led to some confusion. Collier (1933) considers the distinction between Landry's paralysis and acute polyn neuritis to be an artificial one based on the presence or absence of objective sensory disturbance. He regards the sensory changes as an expression of the peculiar selective capacity of the poison and points out the not uncommon case of polyn neuritis with no objective alterations in sensation. Russell Brain (1933) similarly holds that Landry's paralysis and acute polyn neuritis are identical. Drake (1935) accepts as Landry's paralysis any acute ascending paralysis of a lower motor neurone type irrespective of the etiology—syphilis, infectious diseases, poliomyelitis, &c.

According to Goldby (1930) there are three forms of this variety of paralysis. He has collected and tabulated in all 54 cases. In the first group he places those cases in which there is little or no febrile reaction and in which post mortem examination reveals few if any changes. This group is almost exclusively confined to males in its series and occurs usually during the third decade of life. Sphincter control is nearly always preserved and sensory changes are subjective; the etiology is unknown. In the second group an acute paralysis of the lower motor neurone type ascends symmetrically on both sides of the body as in the first group but this subdivision is characterized by objective as well as subjective sensory changes and post mortem changes in the parenchymatous and interstitial tissue of the nervous system. Sphincter trouble is more common than in the first group although the age incidence is

much the same. An important feature is the general toxæmia present. *Ætiologically* this group is closely related to acute polyneuritis. The third group comprises those cases in which the post mortem findings are very similar to those of poliomyelitis. In such cases the paralysis is preceded or accompanied by a febrile illness and clinically signs of increased intracranial pressure with meningeal irritation are present.

CASE REPORT

The following is an account of a fatal case of acute ascending paralysis in a girl of 14½ years.

The child was admitted at 8 P.M. on Oct. 15th, 1936, and died at 3 o'clock next morning. In infancy she had had chicken-pox, measles, and whooping cough. She was an only child and still at school, where there were other children ill with "colds," and others absent on account of illness. She was perfectly well until her present condition. Her father and mother are alive and well. She had been well until 12 days before admission when she developed a headache over the frontal area. With this headache there was a sense of congestion in the nose, which however did not actually run. No sore throat was complained of. She went to bed on the same day and the headache did not abate. A severe pain in the back of the neck began 2 days later, this was continuous but it disappeared on the day before admission. The headache also persisted and was present until the day before admission. Her lower limbs became weak 8 days after the beginning of the illness. This weakness increased until she was unable to move them. Next day her upper limbs became similarly affected and difficulty in breathing commenced. At no time was there any pain in the limbs. There had been no incontinence of urine or feces, no rigors, diplopia, or convulsions. Insomnia had been severe.

On admission her temperature was 99.5° F., respirations 40, and pulse rate 105. She was a well-developed and very intelligent child. She answered questions clearly and was able to give a lucid account of her condition. The face was flushed and the alæ nasi working markedly. The lips were cyanosed. Pulse regular in force and rhythm. Tongue coated.

Central nervous system—Pupils equal, regular and central reacting to light and accommodation. Vision and fields of vision unimpaired. The eyeballs move in all directions with no sign of muscle weakness or nystagmus. Corneal sensitivity and sensation in the face apparently normal. Some paresis in left lower face, but no actual paralysis. There was no difficulty in speaking or swallow-

ing, and the palatal muscles moved well and equally on both sides. Tongue protruded in midline, jaw muscles unaffected. The muscles of the neck were paralysed and the patient was unable to move her neck in any direction at all. Considerable pain was elicited on passive flexion of the neck which was very rigid.

Both upper limbs were in an advanced stage of paralysis, the right more than the left. On the left, slight flexion and extension of fingers and wrists, and very limited extension of forearm were present. The right arm showed

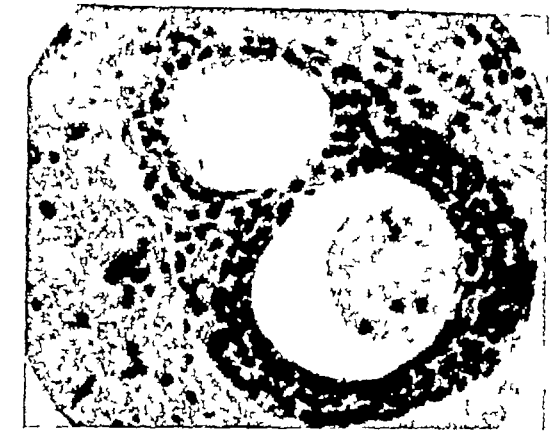


FIG. 2.—Dorsal cord anterior horn (hematoxylin and eosin) showing perivascular cuffing and edema and a collection of microglia cells ($\times 520$).

some degree of flexion and extension of the left foot and extension of the left knee. The right leg appeared completely paralysed. The muscles of the lower limbs were very hypotonic, reflexes present and equal on both sides, plantar responses flexor, no sensory loss in either leg.

Throat—Generalised inflammation. Signs of left follicular tonsillitis.

Chest and abdomen—Normal.

Lumbar puncture—Clear, colourless fluid, pressure 130 mm. Pathological report on cerebro spinal fluid—

Total cells	14 per c mm (lymphocytes)
Globulin	A trace
Total protein	0.025 per cent
Chlorides	0.676 "
Sugar	Normal
Lange's gold curve	0 0 1 2 2 2 0 0 0 0

The stained specimen revealed no organisms and cultures remained sterile after 7 days.

Progress—The dyspnoea and cyanosis became increasingly worse. Just before death the temperature became subnormal and the pulse rate dropped to 78.

A post mortem was performed and the cord and brain removed under aseptic precautions. Portions of the cord and brain at varying levels were submitted for pathological examination, while similar portions were dispatched to the Lister Institute of Preventive Medicine.

Pathological report—To the naked eye the pial vessels were engorged, especially over the cord and brain stem. The cord was soft and oedematous, but showed no gross softening. Portions of the cord were taken at all levels and from the mid brain and cortex, and were fixed in 75 per cent alcohol and 10 per cent formal saline. The sections, stained with

Lehmann's stain and hematoxylin and van Gieson's, showed that no portion of the cord had escaped severe damage. The large anterior horn cells, particularly in the lumbar and cervical enlargements, were greatly reduced in number. Some were degenerated, with swelling of the cytoplasm, disappearance of Nissl's granules, and necrosis of the nucleus. Round about these degenerated nerve cells there was considerable focal glial reaction. Cell nests of microglial cells, many of them rod shaped, were visible in some of the sections.

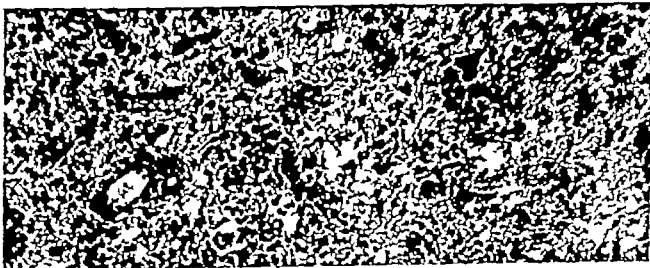


FIG. 1.—Lumbar cord anterior horn (Lehmossok's stain) showing destruction of large anterior horn cells ($\times 160$).

ing, and the palatal muscles moved well and equally on both sides. Tongue protruded in midline, jaw muscles unaffected. The muscles of the neck were paralysed and the patient was unable to move her neck in any direction at all. Considerable pain was elicited on passive flexion of the neck which was very rigid.

Both upper limbs were in an advanced stage of paralysis, the right more than the left. On the left, slight flexion and extension of fingers and wrists, and very limited extension of forearm were present. The right arm showed

Virohow Robin spaces showed oedema and congestion with perivascular cuffing. In many areas minute capillary hemorrhages were visible about the vessels. In the lumbar region there was destruction to the central canal of the cord and much congestion of the pia and nerve roots (Figs 1 and 2). The spleen and lymphatic tissues in the ileum were not examined.

Animal inoculation.—At the Lister Institute an emulsion was made of the material sent and 1 c.c. injected into the brain of a monkey on Oct. 17th. The monkey remained well until Oct. 23rd when it seemed lethargic and its movements became weak and incoordinated. Next day the condition was much worse and the animal was unable to eat. It remained huddled up and immobile in a corner and when disturbed only moved with great difficulty. On Oct. 26th it was very ill indeed and the weakness was even more pronounced. The temperature was well below normal. The animal was not expected to survive the day and so was killed. The brain and cord were removed and sectioned but nothing abnormal was found beyond slight congestion of the meninges and brain surface. The other organs revealed no abnormal findings. The monkey's brain was then emulsified with portions of the cord at various levels. 1 c.c. was injected directly into the brain of a second monkey and 1 c.c. of emulsion which had been filtered into the brain of a third. Neither injection produced any effect on either monkey, both being alive and well two months after the inoculation. Then into the brain of two rabbits was injected 1 c.c. of the emulsion obtained from the brain and cord of the original monkey. Neither inoculation was subjected to previous filtration. One rabbit died and again autopsy failed to reveal anything abnormal in the central nervous system or other organs. The other rabbit remained unaffected. From the rabbit which died the brain and cord were emulsified and injections were made intracerebrally into two other rabbits which are alive and well six weeks after inoculation.

COMMENTS

Dr G. H. Eagles who has kindly performed the inoculation work states that the first monkey which died did not behave at all like a case of poliomyelitis. The restlessness, nervousness, and apprehension found in monkeys suffering from poliomyelitis were absent, as was the high pitched cry which is so typical. There also was no flaccid paralysis in any of the monkey's limbs.

An inquiry was made whether there was any poliomyelitis in the district in which the girls' school and house were situated. The M.O. of that area had received one notification only during the whole of 1936.

The case is singular in some respects. A period extending over eight days of generalised symptoms preceded the onset of the paralysis. The throat showed definite inflammatory changes and it is possible that this was the origin of the toxin—if toxin it was—that caused the changes in the central nervous system. Pathological changes were very considerable in the sections of the spinal cord of the girl, this being very unlike the usual negligible post mortem findings of the cases described originally by Landry. Also the case does not fit in with a diagnosis of poliomyelitis because of the clinical picture and behaviour of the animals inoculated with an emulsion of the spinal cord and brain.

My thanks are due to Dr. Eagles for the inoculation work at the Lister Institute and to Dr. Redvers Ironside for the pathological report and for his very kind advice.

REFERENCES

- Brain, W. R. (1932) *Diseases of the Nervous System*. London, p. 266.
 Coffey, J. (1933) in *Price's Textbook of Medicine*. London, p. 1165.
 Drake, R. L. (1935) *Med. Rec.* 142, 232.
 Goldby, J. (1930) *J. Neurol. Psychopath.* 11, 1.

LYMPHATIC LEUKÆMIA WITH BILATERAL MAMMARY CHANGES

REPORT OF A CASE

By B. JOAN HARAM M.R.C.S. Eng.

ASSISTANT PATHOLOGIST, ELIZABETH GARRETT ANDERSON HOSPITAL, LONDON

The patient, an unmarried woman of 39, was first seen on April 7th 1936, when she complained of a swelling in the left breast of three months' duration. It had gradually increased in size and was associated with neuralgic pain. There had been no discharge from the nipple and no pain in the breasts during the menstrual periods.

Past history.—A small swelling, thought to be a cyst, had been removed from the right breast ten years previously. Apart from curettage for dysmenorrhœa in 1927, a "nervous breakdown" in 1935 and a tendency to winter coughs, the patient had always been healthy.

Clinical findings.—The left breast was seen to be larger than the right and a mass was visible in the upper quadrant. The nipple was not retracted. On palpation a tumour about the size of a very large hen's egg was felt in the upper part of the breast, attached to skin but not to deep structures and a hard gland was palpable in the left axilla. The chest was radiographed and no evidence of secondary growth was found, but there was some fibrosis of the right lung. The cardiovascular system was normal except for a soft apical murmur and no other abnormality was found.

Operative findings.—On April 21st the patient was admitted for operation, and frozen section from a piece of the tumour showed infiltration of the breast tissue by a small round-celled growth and much inflammatory change. Radical amputation was performed and the patient ultimately made a satisfactory recovery although this was delayed by massive collapse of the left lung with marked cardiac displacement.

During her convalescence a blood film was examined on the advice of the pathologist and this showed no abnormality, polymorphonuclear leucocytes being present in normal numbers.

The full pathological report on the left breast confirmed and amplified that on the frozen section (Fig. 1). The breast measured 8 in. × 6 in. × 2 in. and the nipple was not retracted. A tumour occupied the upper part throughout its whole thickness, extending from the nipple to the margin of the breast in all directions. This tumour was firm, smooth and not encapsulated. A slice taken for section appeared to consist of solid growth without demarcation. Microscopically large areas of the breast tissue were infiltrated with densely packed mononuclear cells invading the lymphatics and growing in sheets along the planes of the connective tissue. The appearances suggested sarcoma, in view of the fact that many of the cells had oval nuclei and areas of unchanged breast alveoli were present (Fig. 2). On examining the axillary tissues six glands were found the largest being 1½ in. × 1 in. × 1 in. This showed lymphatic infiltration at one end by small round mononuclear cells (Fig. 3). Projection of this part of the gland showed the average size of the infiltrating cells to be 8.8 μ , while that of the lymphocytes in the normal glandular tissue was 3.6 μ . These measurements are naturally smaller than would be found in fresh unfixed tissue.

SECOND ADMISSION

Four months after her discharge the patient returned complaining of pain in the right breast and a swelling which she had noticed a fortnight previously.

Clinical findings and operation.—A very tender mass 1 in. in diameter was palpable in the upper outer quadrant of the right breast and an enlarged gland was felt in the corresponding axilla. The patient was readmitted on Dec. 8th and apart from her leucocytes being pale and thin, routine pre-operative examination revealed no abnormality. The lungs were clear and showed no

of the previous collapse. Local amputation of the breast was performed under Evipan followed by gas and-oxygen.

Pathological report on right breast—The size was 6 in × 5 in × 2½ in, and firm areas of indefinite outline were irregularly distributed throughout the breast. Mid way between the inner margin and the nipple and on a level with the nipple was a circular, hard area ½ in in diameter,

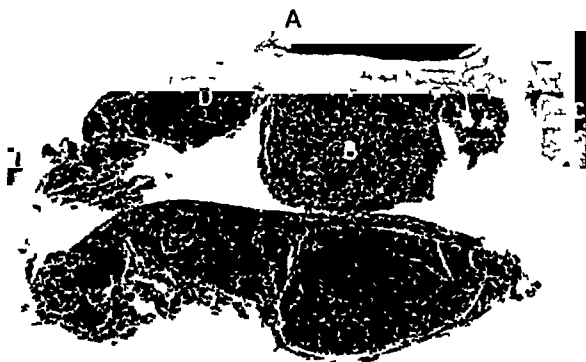


FIG 1.—Left breast sliced from above downwards showing extensive growth. A = nipple. B = growth. C = axillary tail. D = normal breast tissue.

which did not appear to be encapsulated. The alveolar tissue was fairly profuse, and immediately above the nipple was a small fibro adenoma. There was a diffuse cellular infiltration in the outer part of the breast. Microscopically the hard nodule internal to the nipple consisted of an area of breast tissue infiltrated with tightly packed cells resembling large lymphocytes.

A full blood count was advised, and gave the following result: hemoglobin, 42 per cent; red cells, 2,184,000 per cmm; colour index, 1.0; white cells, 17,800 per cmm (polymorphonuclears 0.5 per cent, lymphocytes 99.5 per cent, mostly large). No other types of white cell were seen among the 200 cells counted but several normoblasts and megaloblasts were present. Projection showed the diameter of the large lymphocytes to vary between 12.3 μ and 15.7 μ.

Further progress—Two days after the operation the patient became extremely ill, with a pyrexia of 103°–104° F, rapid pulse, dyspnoea, and drowsiness. Examination showed collapse of the whole of the right lung and the left base. A leucocyte count was taken three days after the previous one and showed 20,400 cells per cmm, again nearly all being large lymphocytes. The general condition rapidly deteriorated, and twelve days after the operation her blood picture showed what proved to be a terminal leucopenia, the white cell count being 2000 (polymorphonuclears 16 per cent, lymphocytes 83 per cent, hyaline 1 per cent). The hemoglobin had fallen to 28 per cent. The bases of both lungs gradually re-expanded but the patient died three days later.

POST MORTEM FINDINGS

It was remarkable that the amount of lymphoid tissue in the whole body was extremely small. There were no enlarged glands palpable, and very few lymph nodes along the vessels. The mediastinal, aortic, and mesenteric glands were all unusually small, the largest found being ¼ in in diameter, and although the gall bladder was distended with bile and the bile passages enlarged, there were no glands causing pressure on the common duct. The spleen was dark purple in colour of firm consistence, and weighed 8½ oz. Section of this organ showed congestion and small patches of infiltration by cells resembling large lymphocytes. Films were made of the bone marrow from a piece of rib and from the lower end of the femur. The former showed a few mononuclear cells and nucleated red corpuscles and the latter showed fat only. Sections of liver and kidney showed no leukemic infiltration.

DISCUSSION

This case presented some unexpected difficulties, for although the possibility of a leukemic process

was suspected after the first operation, the examination of a blood film failed to reveal its presence. There cannot have been any considerable increase in the number of white cells in the blood at that time, and the post-operative increase in polymorphonuclear cells was sufficient to mask any change in the lymphocytes that may have been present. A complete blood count might have led to a correct diagnosis. In this connexion it is noteworthy that Parsons (1936), in recording blood changes associated with experimental mouse sarcoma, says that before formation of the tumour no large increase in the leucocyte count was found, although a few abnormal cells appeared in the blood, but with the development of the sarcoma an increase in the total leucocytes and also a reversal of the relationship between the cells occurred. Cellular changes were also seen in the liver, spleen, and bone marrow. The results suggested that a substance which stimulated the formation of certain types of leucocytes was present in the tumour.

In the case described, the second difficulty was to determine the site of the primary lesion. There was a definite hyperplasia of the axillary lymph glands, but here the lymphocytes were of normal size except in the connective tissue surrounding one end of the largest lymphatic gland, where they simulated malignant infiltration (Fig 3). The monocytes found in the breast nodule were, however, large and pleomorphic, and pale areas resembling endothelial cells surrounded by closely packed, densely staining large lymphocytes were present. If these cells originated in the axillary glands and spread to the breast by retrograde lymph flow, then they underwent further development in that tissue.

Dawson (1936) refers to localised mammary involvement in blood diseases when discussing metastatic breast tumours. She describes a case in which a

primary growth was found in the stomach and was associated with extensive lymph vessel carcinosis in both breasts without the formation of obvious metastases. The path of invasion into the breast was thought to be by retrograde lymph flow from the axilla, after blockage of the supraclavicular glands from the primary tumour.



FIG 2.—Section of breast (× 100). A = mononuclear infiltration. B = mononuclear infiltration in sheets along the connective tissue planes.

blockage of the supraclavicular glands from the primary tumour.

In the case under discussion it was curious that in the first specimen the infiltration was strictly limited to the upper part of the breast, the tumour though not encapsulated having a sharp margin (Fig 1). Even microscopically there was no lymphocytic infiltration in the lower half of the breast, nor could any excess of white cells be detected in the blood vessels. Attempts to make a differential count failed through lack of material. In the second specimen

however the infiltration was very irregularly distributed throughout the whole breast. It would appear that the mammary glands of this patient were for some reason specially favourable sites for the proliferation of mononuclear cells. There must have

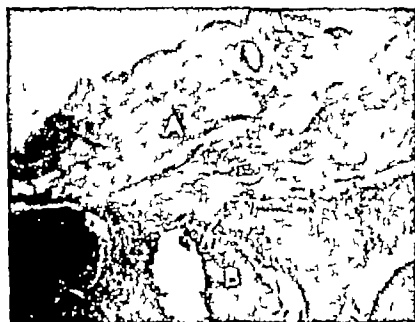


FIG. 2.—Section of largest gland, showing infiltration by large mononuclear cells (A). B = normal lymphatic tissue. (x 45)

been some reason for the different distribution of the lesions on the two sides but this has not been determined.

A study of the literature shows that breast nodules are not uncommonly associated with chloroma and myelogenous leukemia but are rare with lymphatic leukemia the only really similar case being described by McWilliams and Hance (1912).

Their patient was a married woman of 33 who was found to have a tumour in the right breast which on excision showed the microscopic appearance of lymphoma. Five months later the patient returned with further nodules in the same side a mass in the other breast and enlarged axillary glands. Microscopically the nodules showed a huge number of small cells with round or oval nuclei resembling lymphocytes, and the diagnosis of lymphosarcoma was made. A blood count gave: haemoglobin, 30 per cent; red cells, 3,000,000 per cmm; white cells, 117,000 (90 per cent lymphocytes). The spleen became palpable shortly before death but there was never any enlargement of the superficial lymph nodes except in the axilla. At the post mortem examination all the blood-forming tissue showed transformation to a tissue in which the predominating cell was the mononuclear leucocyte.

Whitby and Britton (1934) mention atypical forms of chloromata which may occur in any tissue and be unassociated with green coloration. The blood picture in these cases may be of either the lymphatic or myeloid type.

Frevithick (1903) describes a case of chloroma in a girl of 13 with bilateral enlargement of cervical and axillary glands and bluish firm globular tumours in both breasts. Later multiple bony swellings appeared. No blood count was taken but a film revealed a leucocytosis which before death showed a rapid and large increase in mononuclear cells. Post mortem examination showed multiple deposits of green material with the microscopic appearance of normal tissue invaded by densely packed mononuclear leucocytes. A rather similar case is described by Simon (1912) in a girl of 16 who had a four weeks history of a rapidly growing tumour in the breast attached to the skin. Radical amputation was performed and the tumour found to be a chloroma. Subsequent blood counts showed a progressive

anaemia, eosinophilia and many myeloblasts. At the time of operation there was no lymphatic enlargement except in the axillary glands of the affected side but there were generalised metastases before death. Post-mortem examination was not allowed.

Ziegler (1911) describes a pseudo leukaemic mammary granuloma, and mentions that deposits stimulating growth may occur in any organ in cases of myelogenous or lymphatic leukemia.

In conclusion the experience gained by the case described suggests that it would be worth while to make a complete blood examination in any patient under 40 who presents herself with a breast tumour simulating malignancy.

SUMMARY

(1) A case of lymphatic leukemia is described in which the only gross manifestations were in the breasts. (2) The tumour removed from the left breast had a pathological appearance simulating sarcoma, with dense infiltration by large mononuclear cells. (3) Five months later a similar tumour was removed from the right breast. (4) At the time of the first operation the blood film showed no abnormality but after the second operation 99.5 per cent of the white cells were lymphocytes. (5) The post mortem findings were remarkable in that there was extremely little lymphoid tissue present in the body.

My thanks are due to Miss F. Syk, the surgeon in charge of the case for her permission to publish these notes.

REFERENCES

- Dawson, E. K. (1936) *J. Path. Bact.* 43, 1.
McWilliams, A., and Hance, J. (1912) *Am. J. Med. Sci.* 143, 518.
Parsons, L. D. (1930) *J. Path. Bact.* 43, 53.
Simon, L. G. (1912) *Brit. Med. J.* 1, 493.
Frevithick, E. (1903) *Lancet*, 158.
Whitby, L. H., and Britton, G. J. O. (1934) *Disorders of the Blood* London p. 324.
Ziegler, E. (1911) *Z. Klin. Med.* 73, 53.

REACTIVATION OF A TUBERCULOUS FOCUS BY MICRO-ORGANISMS OTHER THAN THE TUBERCLE BACILLUS

By W. PAOEL, M.D. Berlin

(From the Sims Woodhead Memorial Laboratory Papworth Village Settlement Cambridge)

REACTIVATION of a tuberculous focus usually follows its liquefaction. The old view that this liquefaction was caused by a mixed infection, especially with staphylococci, streptococci and pneumococci has been almost entirely abandoned. The view was chiefly based on the observation of mixed infection in foci already liquefied—particularly in cavities. This is clear from the careful histological investigations of Sata (1899). The same has been pointed out recently by Kasper (1932) and Roulet (1936). But exact histological or bacteriological evidence of the liquefaction of a solid focus by these micro-organisms has never been brought forward.

The clinical significance of liquefaction is the phenomenon leading to active tuberculosis (Lange 1931, 1932; Long 1933) may justify the report of a case in which there was clear evidence that micro-organisms other than the tubercle bacillus caused liquefaction of a tuberculous focus even if such an event is exceptional.

CASE REPORT

A male child, aged 4, from March 1933 to the end of April 1934, tubercle bacilli were consistently found in the sputum. From then until his death in December 1934, the sputum was negative. In March 1935 the

sedimentation rate (Westergren, 1 hour) was 17, in October it was 4. At the end of November lobar pneumonia of the right lower lobe developed, and he died from heart failure on Dec 3rd, 1936

A series of skiagrams taken between December, 1933, and November, 1936, showed disappearance of a cavity in the right upper lobe and shrinking of areas of infiltration in both upper lobes with formation of typical sharply defined "round foci." In addition small calcified nodules were scattered over the right lung

Post mortem examination.—Lobar pneumonia of the right lower lobe (grey hepatisation) with exudative pleurisy. Multiple encapsulated tuberculous round foci. In the right lower lobe in the centre of the pneumonic tissue there was one encapsulated caseous round focus the size of a small cherry, a small bronchus filled with purulent exudate was seen to enter the caseous focus, which was liquefied so that only half of its original volume remained as caseous material, the other half forming a small cavity (Fig 1). Macroscopically it looked like a partially liquefied tuberculous focus. Histological examination confirmed this impression. It was a typical partially liquefied caseous round focus with a fibrotic capsule. A purulent exudate consisting of leucocytes with very numerous pneumococci covered the wall of the cavity and seemed to invade the caseous focus which, in its marginal parts, was being destroyed by the exudate and the pneumococci (Fig 2). There were only a small number of tubercle bacilli in the centre and margins of the focus and in the leucocytic exudate invading the focus

COMMENT

The above case shows the gradual healing by encapsulation of multiple tuberculous round areas of infiltration watched for three years. Death was due to a pneumococcal lobar pneumonia unrelated to the tuberculous process

One of the encapsulated caseous round foci in the centre of the pneumonic lobe was partially liquefied.

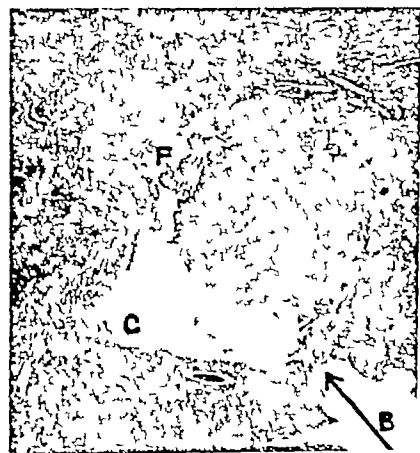


FIG 1.—Histological appearance of the focus ($\times 7$). B = bronchus C = small cavity F = liquefied parts of the caseous focus

Macroscopically this looked like tuberculous liquefaction and therefore it was suspected that the pneumonic process was perhaps due to aspiration of liquefied caseous material and therefore a caseous rather than a pneumococcal pneumonia. Histological examination,

however, clearly showed that it was a non tuberculous pneumonia, and that even the liquefaction of the focus was not tuberculous in origin, that is, not due to an increase of tubercle bacilli within the focus

The small number of tubercle bacilli seen in the focus were apparently set free from the caseous material by its liquefaction. Moreover, there were no tubercle bacilli in the cavity produced by the partial liquefaction of the focus and in the purulent exudate of the bronchus entering the focus at one end, whereas innumerable pneumococci were found in these places. In tuberculous liquefaction, enormous numbers of tubercle bacilli are found. The small number of

tubercle bacilli set free by the liquefaction of the focus shows that the presence of large numbers of tubercle bacilli in tuberculous liquefaction cannot merely be due to liberation of the bacilli by the liquefaction of the solid parts, which make it impossible to detect them. There is ample histological

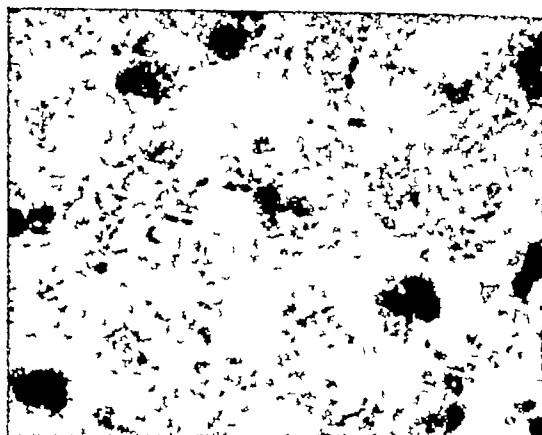


FIG 2.—Marginal parts of the focus (Microscope 1000 enlarged $\times 2$). Leucocytic infiltration rich in pneumococci

proof that in this case the liquefaction of the caseous focus was due to its invasion by a leucocytic exudate rich in pneumococci, it was therefore the result of pneumococcal infection—a non specific inflammation

I can find no report of a similar case. Carl Weigert 50 years ago said that flaring up and generalisation of a tuberculous process following measles are not caused by weakening of the general resistance or by an alteration in the response of the organism to the tubercle bacillus due to the intercurrent diseases, but a non specific inflammatory process in the lungs may involve the capsule of a caseous lymphatic gland, invade the latter and thereby liberate the tubercle bacilli enclosed in the caseous focus. The anatomical and histological findings of such an invasion of tuberculous foci by non specific inflammatory processes have, however, hitherto not been described. More recently Bézançon, Delarue, and Vallet-Bellot mentioned that if an inflammatory process of sufficient activity occurs, an old lipiodol deposit trapped in the lung may be suddenly liberated and thus disappear, but these authors also do not provide anatomical evidence

The value of the case described above does not therefore lie only in the evidence of liquefaction of a tuberculous focus due to micro organisms other than the tubercle bacillus, but also in that it shows how quiescent foci may flare up after pneumonia. This is certainly one way in which active tuberculosis may follow a non specific inflammation of the lungs

SUMMARY

A case is described in which one of the tuberculous round areas of infiltration was found partially liquefied in the centre of a lobar pneumonia. Histological evidence showed this liquefaction to be due to an invasion of pneumococci into the caseous focus. Liquefaction and reactivation of a tuberculous focus can therefore be due to micro organisms other than the tubercle bacillus

REFERENCES

- Bézançon F, Delarue J, and Vallet Bellot M (1935) *Ann Anat path méd-chir* 12 229
Fraenkel A (1904) *Spezielle Pathologie und Therapie der Lungenkrankheiten* Berlin und Wien

(Continued at foot of opposite page)

CLINICAL AND LABORATORY NOTES

CONTINUOUS VENOUS HUM IN
BILHARZIAL CIRRHOSIS OF THE LIVER

By M. R. KENAWY M.D. Cairo

REGISTRAR TO THE MEDICAL UNIT OF KASS EL-AINI HOSPITAL,
CAIRO UNIVERSITY EGYPT

Cirrhosis of the liver is endemic in Egypt among the cultivator class. It is caused by infestation with bilharzia ova usually of the mansoni type and their deposition in the liver. In the last two years I have been able to collect 6 cases of bilharzial cirrhosis with or without splenomegaly in which a continuous venous hum could be easily heard over a localised area over the xiphoid process. The murmur has the following characters: (a) it is a continuous hum which increases in loudness during inspiration and decreases during expiration; (b) it is louder in the sitting or standing position than while the patient is recumbent; (c) it is localised and not propagated and not heard at the back; and (d) it is not associated with any cardiovascular abnormality. As there has been much controversy about the source of such a hum I thought the following record might be helpful.

A male aged 20 was admitted to hospital on July 20th 1936 complaining of an abdominal swelling for a year. He gave a history of diarrhoea and terminal hæmaturia two years before. He was pale and was stunted in growth. The abdomen looked distended; the liver was enlarged three fingers breadth in the mammary line and hard in consistence. The spleen was enlarged down to left iliac fossa. Nothing abnormal was detected in heart or lungs and there was no free fluid in the abdominal cavity. Over the xiphoid process a continuous venous hum with the characters described above could be heard. The stools contained *Bilharzia mansoni* ova. The urine contained albumin and blood. Renal function normal. Wassermann reaction negative. A blood count showed: hæmoglobin 50 per cent. red cells 3,800,000 and white cells 3,200 (polymorphs 75 per cent. lymphocytes 25 per cent.). Blood pressure 100/65. Sigmoidoscopic examination showed a slight granularity of the mucous membrane and nothing else abnormal. The patient was treated with iron and a full course of tartar emetic. On Sept. 23rd splenectomy was performed. Immediately after the operation and on the following days the hum had disappeared. He was discharged on Oct. 18th.

From my experience in the other 5 cases there is no relationship between the hum and the presence of ascites nor had specific treatment with antimony (tartar emetic) any effect on the hum. The degree of anaemia and its further improvement under treatment also had no effect.

In the case recorded above the hum disappeared entirely after splenectomy. This suggests that during the removal of the spleen the source of the hum was also removed. Since the hum occurs in cases of cirrhosis of the liver without splenomegaly it could not be assumed that the spleen was the actual source and most probably it arose in some venous communication which was severed during the operative manipulations. The increased loudness of the murmur during

inspiration and its greater loudness in the standing or sitting position where the action of the diaphragm is more free and thus allows a greater rise of intra-abdominal pressure afford further corroborative evidence. Its disappearance after splenectomy as well as its complete absence on auscultation of the back excludes the possibility of stenosis of the vena cava by a perivenous hepatic fibrosis such as Dr J. L. Bates suggested in THE LANCET of May 6th (p. 1108).

CONCLUSIONS

- (1) The continuous venous hum previously recorded in Hanot's cirrhosis and Banti's disease also occurs in endemic (bilharzial) cirrhosis of the liver in Egypt with or without splenomegaly.
- (2) Six cases have been collected in the last two years. In one of them the hum disappeared after splenectomy.
- (3) Its disappearance was probably due to removal of some venous communication during the operation.

My thanks are due to Prof. H. B. Davy for kind advice and encouragement.

LYMPHATIC CYST OF THE EAR

By MR. S. S. SING M.B. Calcutta M.R.C.P. Lond.
CAPTAIN INDIAN MEDICAL SERVICE BURMA

I HAVE not been able to find any published account of the condition described in this note which I have named lymphatic cyst of the ear. I believe however that it is not uncommon.

Clinical features.—A painless tense and cystic swelling translucent on illumination appears in the concha on the lateral aspect of one or both ears. Its progress is extremely slow and it may not be noticed for a long time. When well developed it may completely fill the concha (see Figure). The pinna is not thickened and the auricular glands are not enlarged. The six patients I have seen have all been adult males living in Burma.



Pathology.—There is no evidence of leprosy or filariasis. On aspiration of the cyst a thick straw-coloured fluid is obtained. Dr N. Hamilton Lawler who was kind enough to examine the fluid from one of them reported that it contained no micro-organisms or cells and expressed the opinion that it was from a simple cyst. Evidently there is lymphatic obstruction of some sort and it is noteworthy that 5 of the 6 patients wore spectacles with curved aural supports which pressed against the angle formed by the ear and the skull. The spectacles had been worn for periods varying from 2 to 27 years. The sixth patient had no spectacles but wore a Burmese headdress called *gaungbaung* which consists of a fine silk scarf worn tightly round the head along a line passing across the forehead just above the ears and downwards and backwards over the occiput. All these patients had seborrhoea and often the irritation of the aural supports produced crop of acne and it is probable that the ear itself was irritated by the aural supports and the consequent interference with the lymphatic drainage of the ear resulting in

(Continued from previous page)

- Kasper M. (1932) *Zts. Biol.* 126 252
 Lange E. R. (1932) *J. Amer. med. Ass.* 104 1553
 Pichel W. (1930) *Deuts. Klin. Wochenschr.* 76 411
 — (1935) *J. Path. Bact.* 42 417
 Roulet F. (1936) *Acta Derm.* 1 1
 Sata A. (1939) *Deuts. Path. Anat. Suppl.* III
 Welser G. (1886) *Fortschr. Arch.* 104, 31

intermittent obstruction and cyst formation in the area drained, and the repeated subminimal infections may also have favoured the onset and progress of the cysts. The Wassermann reaction was done in 2 cases and found to be negative.

Treatment—The pressure behind the ear must be relieved and spectacles changed and fitted properly. The local treatment consists in evacuating the cyst through a medium sized hypodermic needle and injecting a sclerosing solution through the same needle. The cyst is emptied by applying pressure from the periphery towards the needle. The presence of blood indicates that too much pressure has been applied. Quinine urethane solution (Parke, Davis and Co.) was used but other sclerosing fluids would serve. Pressure is applied for a few minutes, and a pressure bandage could be applied for a few hours if blood appeared during the evacuation. The condition may recur but can be treated in the same way again if need be. My six patients have had no recurrence in the 2-7 years that have elapsed since the last treatment.

SUMMARY

A cystic swelling developed in the concha of the ears of 5 persons who wore spectacles with curved aural supports. A similar condition developed in a patient who had pressure of a different kind applied round his head. The cyst is believed to be the result of lymphatic obstruction. Treatment by evacuation and injection of sclerosing fluid gives good cosmetic results.

A CASE OF NÆVOID AMENTIA

BY RALPH BATES, F.R.C.S. Eng., D.P.M.

MEDICAL OFFICER, STOKES PARK COLONY, STAPLETON, BRISTOL.

NÆVOID amentia is rare enough to justify the short description of a characteristic case. Tredgold¹ summarises the syndrome as a combination of nævoid growths of the skin and meninges, mental defect



FIG 1—Photograph showing extent of the nævus

(usually idiocy or imbecility), hemiplegia, and epileptic form fits. The frequency of the condition is given as about 1 in 800 mental defectives, but the case described below is the only one discovered in an examination of more than 2000 defectives. Vascular nævi are discussed in greatest detail in the standard textbooks on skin diseases, but these do not usually mention the syndrome nor do they call attention to the association

between vascular nævi of the skin and vascular abnormalities in the meninges.

A feeble minded woman aged 36, has been under observation at Stoke Park Colony for the past five years. As Fig. 1 shows, there is an extensive nævus of the right

side of the face limited below by the lip margin and a line from the angle of the mouth to the malar bone. Above the orbit, the nævus extends to the hair margin of the forehead and on to the hair bearing area of the temporal region. There is no extension across the middle line of the face or scalp and the cartilaginous portion of the nose is not involved. On the buccal aspect the



FIG 2.—Radiogram of skull showing calcification in frontal region

nævus covers the right cheek and extends on to the palate, but is again limited by the midline.

The lower limit of the nævus corresponds with the lower limit of the embryological maxillary process. The area covered by the nævus corresponds to that part of the face which is formed by the maxillary, lateral nasal, and median nasal processes, while the nasal part of the fronto-nasal process is normal. The exception to an otherwise exact correlation is the fact that the ala nasi (which is formed from the lateral nasal process) is covered with normal skin. The islands of nævoid tissue below the main nævus are good examples of Virchow's "fissural angiomata" situated at the junction of maxillary and mandibular processes.

The conjunctival vessels of the right eye are dilated and tortuous. Examination of the left fundus shows a normal disc with rather full veins. The right fundus shows a very deep physiological cup (—7D) with the fundus raised around it. The vessels at the cup edge can be focused with —3D and those in the periphery with —1.5D. The veins are very tortuous and dilated but diminished in number compared to the left side and the arteries are small.

Examination of the limbs shows a difference in development on the two sides. The left hand is smaller than the right and the left upper limb is shorter by 1½ in. The left lower limb is an inch shorter than the right. Both upper and lower limbs show muscular weakness and increased tendon reflexes on the left side. There is slight rigidity of the left lower limb, but the plantar reflex gives a flexor response. There is no alteration in sensation.

An X-ray photograph of the skull (Fig. 2) shows irregular areas of calcification in the frontal region compatible with calcification in a plexiform angioma.

This patient has suffered from epileptic fits since coming under observation. Before the attack she complains of "pins and needles" in the left upper limb, and sometimes that the left upper and lower limbs "feel stiff". On regaining consciousness she feels "as if she has no strength" and the left upper and lower limbs "feel stiff" for a short time. Under ordinary epileptic treatment major fits now occur about once in six months.

My thanks are due to Dr R. J. A. Berry, director of medical services at the Stoke Park Colony, for permission to publish this case.

¹ Tredgold A. F. (1929) Mental Deficiency, London

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SUBSECTION OF PROCTOLOGY

At the meeting of this subsection on May 10th under the presidency of Mr G. GORDON TAYLOR, a discussion on the incidence and treatment of

Diseases of the Colon

was opened by Sir EDWARD SPRIGGS (Ruthin). Much, he said, had been written and stated about the colon in recent years and a good deal had been done to it there were those who would soothe those who would stimulate and those who would bind loosen or denervate. It had been abused for its sins and pitied for its sorrows. The condition of the colon had a profound effect on the body. It shared with the gullet and with the stomach (not with the small intestine) proneness to disease.

In a classification of over 8000 consecutive cases at Ruthin Castle, of all kinds of disease, it was found that one-third suffered from vascular disorders which were prevalent in middle age and beyond. The group of alimentary diseases including rectum liver and pancreas totalled nearly half the 8000. There were 1574 persons who had some affection of the colon including colitis diverticulosis diverticulitis, and carcinoma. The diverticulosis cases numbered 612 in two or three hundred of these diverticula were associated with other complaints. There were 51 cases of ulcerative colitis 33 of dysentery and 64 of growth excluding growths of the rectum. There were 28 cases of obstruction 8 of volvulus 142 of redundant sigmoid. Also 1620 patients had simple delay—i.e. longer than 72 hours. These were not included in the 1574 cases under review nor were cases of ptosis of the colon of which there were 304. The average age for dropped colon was 43 for colitis 44 for colon delay 47 for diverticulosis 58 and for the later stages of diverticulitis 62, which was also the average age for cancer. There were three cases of colitis in women to each one in men while the sexes, surprisingly enough, were equal as regards colonic delay. Of diverticulosis cases there were two males to each female while for diverticulitis the proportion was nine to one. Among patients with new growths males predominated in the proportion of three to one. Cases of colon disease were still mixed* said Sir Edmund because the simple precaution of examining the rectum was omitted examination of the faeces and the use of the sigmoidoscope were of the utmost value. He deprecated the growing habit of attempting a radiological diagnosis by means of a barium enema alone. Flatulence was a term used often in medical reports without a definition it might mean that a patient was bringing up wind from the stomach or was trying to do so or removing wind from the bowel or trying to do so or that he had distension or thought he had. Aerophagy was too often diagnosed nowadays. A patient with hypertrophic gastritis might retch bark and belch as long as the barium was in contact with the hypertrophic area. The effect of a small degree of distension of the small intestine was much greater than that of the same amount of distension in the large gut.

Of 1000 cases in which the patients were said to be constipated 10 per cent did not show radiological evidence of delay. In 1000 cases of real delay shown radiologically the seat was the rectum in 11 per cent

the sigmoid and rectum in 33 per cent. A fourth of the patients were unaware of delay and of these nine out of ten had no disorder referable to the colon. Failure was due to over drying of the faeces or loss of stimulus or a lesion of the anus or rectum. A purge emptied two or three days faeces therefore aperients should not be given more often than this. Of stimuli to the colon distal ones were best. The main use of paraffin was to prevent the stool becoming hard. A deserts spoonful night and morning was usually enough too much caused gurgling and discomfort. It was not normal for the caecum to be a co-spool but it could be made one. He believed that mucous colitis was now less common than formerly and some credit for that could properly be taken by doctors for better teaching about purgatives.

Were redundant sigmoid loops congenital or acquired? Or were they in part congenital and in that case did they develop as ago advanced? X rays showed that when the bowel relaxed it became both longer and wider. If it did not do so and this failure occurred many times the elongation of loops could be explained. His view was that they developed during life but twenty years observation was needed to establish that idea. In his series redundant sigmoid was commoner in people over fifty than under thirty. If surgery was contemplated it should be ascertained whether or not the bowel shortened after evacuation. If it did the case was less suitable for surgery. In cases of constipation sympathectomy had not been very helpful though it was so in Hirschsprung's disease.

Twenty per cent. of patients with ulcerative colitis still died from it. Among the advances in his own time were the giving of these patients a less restricted diet. Secondly gentle douching was a great help but not more often than on alternate days. Rectal lesions must be dealt with and a patient search made for entamoeba in five cases that organism was found only after months or years. He had usually found bacteriological methods disappointing but some physicians reported good result from sera. Dr J. R. Bell used Sir Arthur Hurst's method carefully and obtained 60 per cent of recoveries in 64 cases working in Australia where however dysentery was commoner and the serum (originally prepared by Penfold and Patterson) was more embracing than that used in this country. If the patient had not had dysentery he was being given a non-specific protein therapy. But when 20 per cent of people died and when some remarkable recoveries were recorded by another method of treatment which yet had a mortality of 20 per cent it did not follow that they were the same 20 per cent and he asked whether a patient would have recovered if he had had serum therapy. Many probably a greater number had been treated with Dr Bargan's diploccocal serum made from the patient's own organism. After the diploccocal appointment of fair hopes the reaction might tend to go too far and one American physician of wide experience said he had abandoned all method except rest and the usual symptomatic treatment not even using the douche. Sir Edmund thought that douching helped and he had seen recurrences when it had been omitted. Ulcerative colitis was a recurrent disease in a way similar to gastric ulcer and liver disease but because that liver was not usually recognized. The physician could only in brain gain the resting avoiding strain and stress and eating simple food. He had seen recurrences associated with a

period of stress and worry, with drinking beer, which was known to disagree, with colds, with pregnancy, and with other strains

In 5116 examinations there were 11 per cent of cases of diverticulosis, a term applied when pouches were present but did not cause inflammation of the bowel wall, the term diverticulitis being reserved for the stage at which inflammation and induration of the bowel wall had occurred. The distinction was of clinical importance, especially as many lay people now knew that diverticulitis could be a serious disease, and might prove fatal. His own view was that "sac" was a better term than "diverticulum". In 1920 Mr Marxer at Ruthin Castle discovered a "prediverticular" stage, and that stage had now been observed in 132 patients. Its distribution and characteristics suggested an inflammatory rather than a mechanical origin. In the present series of cases the incidence of diverticulitis was 120 out of 612 cases (20 per cent). Instantaneous photographs of diverticula contracting showed that the element of emptying was the important one, hence it was the muscular wall of the bowel which should be kept in good state so as to prevent diverticulitis. A not uncommon form was that in which mucosal folds occurred, it was this kind which was most likely to cause acute obstruction, sometimes it proceeded to definite polyposis. Almost 20 per cent of cases of diverticulitis showed some form of polyposis. The treatment he recommended consisted of giving paraffin, using a douche every 2-7 days according to the condition, avoiding rich foods and especially alcohol, and enjoining a hygienic life. Great fatigue or worry sufficed to cause the disease again to raise its head. Massage to that part of the abdomen must be avoided, he had seen real harm follow it. Purges were better avoided as a rule. Excision could be carried out in an occasional case—i.e., if the patient was well enough for the operation and the affected area was localised. It was well known that a pouch might burst and cause general peritonitis. Diverticula might also perforate into the connective tissue, Mr Marxer had demonstrated 5 such cases in a series of 120 cases of diverticulitis. Later stages accompanied by abscesses constituted grave surgical risks. If a diverticulosis was recognised soon enough and treated many of these sequelae could be prevented.

Referring next to new growths, which his colleague Dr Patterson had classified, Sir Edmund said the average age of patients with growths was 62 (the youngest being 39, the oldest 92), and the chief age range was 50 to 70. They were three times commoner in men than in women and half of them were in the sigmoid. He was surprised that diverticulitis so seldom led to cancer, bearing in mind the prevailing view of the association of cancer with chronic irritation. In this, as in so many conditions, treatment of the growth with success depended on its early recognition. In his series the length of the history varied from a week to three years. The average time from the first symptom to examination was 11 months. If discovered at a suitable stage there was no region in the body in which excision of cancer was more successful than in the colon. A more general recognition of its early stages would mean a distinct step forward in its treatment. He noted the curious ways in which cancer of the colon showed itself. Sometimes it became well established without showing a symptom, but in most cases there was a symptom which dated back a long time. Of 64 cases of growth 36 had a bowel onset—i.e., constipation, diarrhoea, or irregular motions—17 had pain, many of them a

long history of pain, 11 had a dyspeptic onset, and these were dangerous ones, because they were some times treated for months for peptic ulcer. If barium was given to examine the stomach, it should be followed right through the bowel. Eleven of the cases had rectal bleeding as a first symptom, and all those were sigmoid cases. In 7 cases no blood, mucus, or pus was detected in the faeces, showing that there was no ulceration. Every case of uncertain nature should be given a thorough examination. In all 38 cases were operated upon. In 2 nothing could be done. In most a palliative operation was performed. Excision was done in 13, and in 8 it was successful, 2 were living ten years after the operation, and one of these had had a large lump with great dilatation of the bowel behind. The features determining whether excision would succeed were the character of the growth, and whether secondaries had developed.

In conclusion Sir Edmund said that in applying scientific methods one point which emerged was the amount of suffering which could be avoided by early and adequate examination wherever there was an element of doubt. On this occasion he had been speaking of the objective signs of disease, but perhaps in no other group of disease was it so necessary to consider also the mind of the patient—an aspect of medicine which should never be forgotten.

DISCUSSION

Mr J P LOCKHART MUMMERY expressed his agreement with everything Sir Edmund Spriggs had said. He had been increasingly impressed by seeing cases of apparent ulcerative colitis which had been tested many times for entamoeba without success, but turned out eventually, after a long time, to be chronic dysentery. Whenever he suspected chronic dysentery he had emetine treatment given, in one such case the patient, a clergyman, was supposed to be dying after two months' illness, but was cured in two days and remained well to this day. He agreed that ulcerative colitis often recurred, and he attributed that fact to some hereditary disability, in some people the colon was less resistant than it was in others, and in three instances he had treated father and son for the same condition. One man had remained well ten years after treatment and when he came back with a recurrence he was found to have two very septic molar teeth. After removal of one of them he ran a temperature of 105° F, and was mentally ill. A vaccine was made from his pus, and after it had been given and the other tooth had been extracted he recovered. The speaker did not doubt that the recurrence was due to the septic teeth. Sympathectomy for chronic constipation, though a satisfactory operation, did not give permanent results. For colectomy to be justifiable a case must be a very bad one. Ulcerative colitis might be followed by a stricture extending from the caecal angle to half way to the splenic angle.

Mr ERIC CROOK asked how far constipation caused the development of redundant loops of gut. In a large mental hospital the incidence of volvulus seemed to be much greater than among ordinary people, being greater than the incidence of appendicitis. He did not know how far that was due to habitual neglect of bowel requirements.—Sir ROBERT ARMSTRONG JONES said his recollection was that at Claybury Mental Hospital volvulus was very rare, as also was appendicitis.

Dr G E VILYANDRÉ said he found it increasingly difficult, as a radiologist, to diagnose with certainty

carcinoma of either the bowel or the stomach in an early stage and he often hesitated in his verdict. He was sure it was right to employ the sigmoidoscope as an aid to diagnosis and in helping to decide whether to give a barium meal.

Mr R S CORDELL spoke of the occurrence of intussusception in cases of new growth of the colon.

The PRESIDENT agreed that sympathectomy was of relatively little value for chronic constipation in adults and adolescents. The figures showing that diverticulitis and cancer are seldom associated were confirmed by the experience of Mr Harold Edwards of King's College Hospital as set out in his Jacksonian essay. He asked whether any patient had had performative diverticulitis twice; he had not known such a case.

Sir EDMUND SPRIIGS in a brief reply said he did not know of a patient having performative diverticulitis twice. He had one series of four cases of ulcerative colitis in a family but with that exception no apparent family tendency was apparent.

SOCIETY OF MEDICAL OFFICERS OF HEALTH

A GENERAL meeting of this society was held on May 26th, Dr ERNEST WARD the president taking the chair when a discussion on the

Future of Obstetric Practice

was opened by Dr W G SAVAGE (Somerset). He said that with the present rapid fall in birth rate and in the number of potentially fertile women the value of each potential mother would be greatly enhanced. In the national interest any steps known to be the right steps should be taken to make motherhood safe to preserve potentially fit infant lives and to encourage wives not to avoid motherhood. There was however no sort of agreement as to what were the right steps in spite of much knowledge about the needs and deficiencies of nutrition during pregnancy the actual foods required and their qualities were unknown. Nor was the relation of adequate nutrition to the complications of pregnancy labour and the child's health understood.

One of the most important things to be decided was the relative spheres of the doctor and midwife and on this question there were two views which were not consonant. The British Medical Association memorandum required for every case efficient ante-natal care by or under a medical practitioner; the attendance of a midwife on every case before during and after delivery and attendance by the practitioner at the confinement whenever he or the midwife thought necessary. This scheme tended to relegate to the position of the midwife to that of a maternity nurse with midwifery qualifications acting under the medical practitioner chosen by the patient. The official and legal view recognised the midwife to be an independent practitioner capable of undertaking complete charge of a maternity case. The midwife was bound to call in a medical practitioner to her assistance in certain circumstances the speaker took the word assistance to mean that the midwife still remained in charge and the doctor's role was like that of a consultant. The scale of fees confirmed this view but he thought the majority of medical practitioners translated as set into supererogatory even if called in to some condition such as albuminuria.

not immediately connected with the confinement. The exact relation of the two professions equally entitled in law to conduct midwifery practice urgently demanded the clearest determination. The divergent points of view could be reconciled if the midwife for her part clearly understood her responsibilities and their limits and the doctor abandoned the ideas that a midwife was just a kind of nurse and that when he appeared he was entirely in charge of the case until the end of the puerperium.

Dr Savage held that the training and experience of a great many general practitioners was inadequate to fit them to act as consultants to assist midwives in emergencies except any that of illness of the child, or medical conditions of the mother. The B.M.A. suggestion that steps should be taken to increase the number of maternity cases which the general practitioner would attend did not give due consideration to two modern factors—the high proportion of cases taken by midwives (now 55 per cent. in Somerset) and the declining birth rate. The cases taken by medical practitioners in Somerset (yearly average of 1935 and 1936) were —

Doctors taking less than 3 cases a year	42
3 to 5 cases a year	62
6 to 10	46
11 to 10	31
20 to 29	14
30 or more	8
	103

Some weeks before the publication of the Maternal Mortality Report (see *Lancet* May 8th 1937, p 1125) Dr Savage had suggested as the report had done that only medical practitioners with necessary experience should be called in by midwives.

The midwife of the past and of the present in many instances was a victim of that most terrible type of education a specialised technical training built on a very limited general education. No group of people were more liable to make mistakes than one receiving such an education; hence the pattern of the rules which now harassed the midwife. The rules were being added to and the number of calls for medical assistance had increased enormously; this was unsatisfactory as it was expensive to the local supervising authority it weakened the midwife's sense of responsibility while the calling in of a doctor was not necessarily in the interests of the mother. The midwife of the future the product of the 1936 Act should be able to grasp the general principles as to what she could manage and when help was required. Dr Savage felt that the rules of the Central Midwives' Board should be simplified.

Dr ELWIS NASH (Heston and Isleworth) drew attention to the disastrous effects of puerperal morbidity from sickness of the mother and impoverishment from big medical bills. Speaking of the B.M.A. proposal that the services of a consultant should be provided when considered necessary by the practitioner he said that much depended on the word "consultant". It might be taken to mean merely the next doctor down the road. The problem of the maternity services presented many difficulties to the medical officer of health and to the general practitioner. In his district the average number of deliveries attended by doctors was 6 a year could such limited experience fit a man to be called in as an expert in emergencies? The B.M.A. was anxious to keep midwifery in the hands of the practitioner and to retain the family relationship.

which in that sphere of medicine was the strongest and deepest of a general practitioner's work, but Dr Nash felt that in view of the decline in numbers of the population the B.M.A. had left its effort until too late, and he foresaw that in time every mother would be confined in some institution. If the practitioner could be sure of his patients going to institutions and being attended by someone who was not competing with him he might be glad to be free of midwifery work. If, however, there should be a panel of local practitioners doing obstetric work and yet remaining in general practice there might be the most horrible rows until the scheme were withdrawn. The Scottish report had suggested that nutrition did not matter but the work done by Lady Williams in the Rhondda Valley seemed to demonstrate the need for consideration and investigation of this possible factor. It might be better for the individual to have at her disposal the latest scientific information and skill, with highly trained specialists working as a team, as part of a health service, on an insurance basis, but on the other hand the loss of the old relation between family doctor and patient with its profound psychological influence might be breeding a race of neurotics. Since he had written his communication to the meeting, said Dr Nash, three reports had come out, and in them mention of the general practitioner was seldom made. It was perhaps well to ponder Sir Ewen Maclean's saying that a national maternity service which excluded the general practitioner from its responsible personnel was impossible and unthinkable.

Dr J A NEILAN (Seaham Harbour) spoke from 35 years of general practitioner experience. He contrasted the opportunities of a present-day practitioner with those of thirty years ago and mentioned also that he had found modern midwives inexperienced too. To his eyes they were just flappers thinking much of their day off and keen to call in help to hurry on their cases. Dr Nash had referred to the large bills impeding some mothers' recovery, some young practitioners regrettably looked on their profession as a trade or business, although the doctor's position was a privileged one, he himself had always eliminated bills which might cause the patient or the children to suffer. There was said to be a higher proportion of abnormal cases nowadays, an idea derived perhaps from the midwives' statements on calling in practitioners in cases where no true abnormality existed. Dr Neilan thought that pelvic abnormality might be due to the wearing of high heels.

Dr AGNES NICOLL thought some difficulties would arise in the coming schemes from the fact that a woman needed to be under a doctor during her pregnancy and puerperium. She felt that the health authorities should provide general practitioner attendance. The midwives were going to be specialists in normal midwifery but they were not doctors and could not supervise the puerperium as a doctor could. Was there any reason why a woman should not have her doctor in charge of her at her own or the public health authorities' expense? She held that the general examination should be made by the general practitioner and the obstetrical antenatal examination by an obstetric specialist. It had been said that it was impossible for a practitioner to call in a local colleague as a specialist but she did not think the practitioner need necessarily lose his patients' confidence.

Dr J B HOWELL (Hammersmith) referred to the very rapid increase in use of institutional beds for

confinements in his area and to the reduction in maternity work among the doctors. In the near future sufficient accommodation would be provided to take every case. There had been a great reduction in maternal mortality in that area.

Dr CATHERINE MORRIS JONES (Gloucestershire) drew attention to the great difference between town and country practice. It would be very hard for two country practitioners in partnership to make a distinction between them and to state which of them was competent in midwifery, many country doctors had extremely good results. In Dr Jones's area delay and perineal tears were the two common abnormalities, the bulk of the midwifery practice went to the midwives who often had no afternoon off and were reluctant to take their scanty fortnight's holiday because of the difficulty of leaving their patients.

Dr NORA WATTIE spoke of the difficulty experienced in Scotland of setting up complete medical and midwifery services in six months.

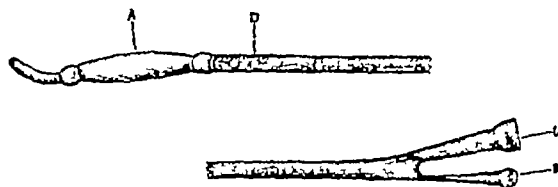
The PRESIDENT wondered whether enough women would be obtainable to stay the course in the coming midwifery services.

Dr SAVAGE, in reply, thought there had been general agreement that the present position could not go on. He pictured a few obstetric consultants with the big consultants over them. That left no room for the general practitioner and he saw no need for a triple arrangement. He agreed that the calls for perineal tears had increased and doubted whether the present arrangement gave value for money. He referred to the possibility that the general practitioner might become a dodo.

NEW INVENTIONS

AN IRRIGATION CATHETER

THE catheter illustrated has been found to provide an easy and efficient means of irrigating the prostatic urethra. The procedure is as follows. After the passage of the catheter (size 16, Charrière) the rubber balloon, A, is distended with water through a separate channel to which access is given at B. The catheter



The catheter in sections

is then pulled upon gently so that the distended balloon makes contact with the bladder wall at the internal orifice. Fluid in the prostatic urethra is thus prevented from flowing into the bladder. The irrigating fluid is introduced at C, traverses the main channel of the catheter, reaches the prostatic urethra through numerous small holes at D, and is returned along the catheter to be voided at the external meatus.

The instrument has been evolved and made for me by the Genito Urinary Manufacturing Co of London.

PERCIVAL P COLE, M.B. Birm., F.R.C.S. Eng., L.D.S.
Senior Surgeon to the Seamen's Hospital, Greenwich,
and Queen Mary's Hospital for the East End, London

REVIEWS AND NOTICES OF BOOKS

Fluorine Intoxication

A Clinical Hygiene Study By Dr KAJ ROHOLM
London H. K. Lewis and Co 1937 Pp 364
20s

This book contains much new and original matter. It opens with an adequate review of the known facts concerning the effects of fluorine upon health. The action of fluorides on the skin are first described and then the symptoms, signs and occurrence of acute fluorine poisoning by ingestion are discussed. The frequency of poisoning by ingestion appears to be increasing: 53 cases were recorded between 1918 and 1935. Insecticides, rat poisons, disinfectants, corrosives and preservatives provide the common sources of this kind of acute fluorine poisoning: sodium fluoride (NaF), sodium fluosilicate (Na_2SiF_6) and dilute hydrofluoric acid are the compounds which are usually responsible. Accidental ingestion is the rule; suicide is rare. The symptoms of fluorine when taken by the mouth are those of an acute gastro-intestinal irritation followed by restlessness and then collapse.

On the subject of chronic poisoning Dr Roholm, after referring to some records of doubtful cases, presents an excellent account of the original work carried out in 1931-32 by Møller and Gudjonsson in a factory in Copenhagen in which erythrite ($\text{Al}_2\text{F}_6\text{ONaF}$) was cleaned and ground. Møller found that the workers suffered from a peculiar sclerotic bone affection affecting especially the vertebral column and the pelvis and the authors assumed that the affection was caused by fluorine. In 1916 Black and McKay studied a peculiar dental disease which showed as a characteristic symptom dark patches upon the enamel of the teeth (mottled teeth). This disease was found to be widespread in Colorado and elsewhere. It affected the permanent teeth only of children who had actually grown up in Colorado and the teeth were not usually deformed. Two changes were observed: irregular patches of the enamel lost their transparency and came to resemble chalk or unglazed paper; this change was evident as soon as the permanent teeth erupted. As a secondary condition these white patches became stained with a dark pigment. The degree of staining varied from yellow to black. Transverse bands of mottled enamel might be noticed occurring especially on the labial surface of incisors and canines, in areas exposed to the light. The enamel was brittle but the teeth were not otherwise especially subject to caries. Petry and later Churchill in the U.S.A. traced the source of this condition to a high fluorine content in the water. It appeared that the threshold value is about 1 mg. per litre. Cases of dental disease of this kind have been recorded all over the world, including certain parts of England.

A valuable chapter follows upon the effects of fluorine upon plants and animals. The damage to plant and animal life around superphosphate works, certain chemical factories, copper-aluminium glass and metal (blast) factories is described. After a discussion on the natural occurrence of fluorine, experimental chronic intoxication is described in great detail. The identity of the animal disease with the human appears to be established beyond question. In the second part of the book a detailed account is given of the author's special contributions to the subject. These consist of (a) a clinical study of a large number of workers (and their families) who are exposed to fluoride both in Greenland and

in the factories of Copenhagen and (b) a careful experimental investigation of the effects of fluoride intoxication in rats, pigs, calves and dogs.

This book is of interest and importance to practising doctors, medical officers of health, to industrial medical officers in any industry in which teflar and other fluorine-containing materials are used, to veterinary surgeons and to agriculturists. We hope that it will be widely read. The translation from the Danish is good though quaint expressions have crept in—e.g. we do not say that an animal has an unthrifty appearance when we mean that it is out of condition. The attention of radiologists should be drawn to the bone conditions described in this monograph. Are the bone changes resulting from chronic fluoride poisoning discoverable in any British industrial areas?

Radiothérapie gynécologique

Curie et Röntgenthérapie By R. MATHY COLNAT
Radiologiste des Hôpitaux; Médecin de la Fondation Bergonié (Centre anticancéreux de Bordeaux et du Sud-Ouest) Chef du Service central d'Electrologie des Hôpitaux du Groupe Pellegrin Le Tondu. Paris: Masson et Cie 1936 Pp 370
Fr 60

This book gives an interesting survey of recent French opinion on the treatment of gynaecological conditions by radiotherapy. The first chapter discusses the physiological basis of treatment and describes the effect on the constituent cells of ovary and uterus and the varying sensitivity of Graafian follicles, interstitial cells, normal connective tissues and neoplastic cells of fibromyoma. In assessing the effects of radiation the work of Legend on the time factor and the relative sensitivity of the malignant tissues is accepted. The author suggests seven to ten days for intracavity radium and four to eight weeks for external radiation as periods which make it possible to give a maximum dose without increasing the resistance of the tumour. The measurement of dosage is discussed in the chapter on technique which is clearly written but not up to date.

The problem still exercising the minds of experts of the use of the Röntgen (r) to express the dose received in the tissues is dismissed briefly and a list of methods is given without consideration of all the necessary factors. On the clinical side there is a short general account of the changes produced by radiation and a careful and interesting section on each type of disease that the author regards as suitable for radiation therapy. He begins with non-malignant diseases and the chapter on fibromyoma is particularly interesting. Lipiodol injection is used in making the diagnosis and allows the size and shape of the tumour to be visualized. The question of operation or radiation is discussed without bias and various methods of treatment are described. The author prefers to give daily treatment over a period of from 20 to 35 days and delivers quite a high tumour dose—2000 r. He claims that if suitable cases for radiation are selected 50 per cent are cured a figure which includes small fibromyomas complicated by haemorrhage. For menorrhagia and metrorrhagia either radium or X-rays give satisfactory results. The dose need not be high when, as happens, the patient is near the menopause. milligramme r was usually enough. X-rays but not r is recommended for infections—a point of interest to British

who seldom make use of this possible method of attack. The doses given are very small, and in young patients produce only temporary amenorrhœa. The treatment of malignant tumours is discussed at length, and the whole section provides a useful survey of possible techniques, and their results. Such a survey is badly needed for reference, and this one will certainly be welcomed, its interest would have been increased to our readers by the inclusion of results from one or two British clinics.

The final chapter is on cancer of the breast, which organ is included in France with gynaecological conditions. The problems discussed are so different from those connected with disease of the female genital organs in the pelvis that the section must stand alone. For this purpose, it is incomplete, and the mere mention of conditions such as lymphosarcoma and nœvocarcinoma of the breast is only confusing. The glancing technique of Finzi and Holfelder is not described.

The book, which is written for the surgeon and gynaecologist as well as for the radiologist, is printed in clear type and is well illustrated.

Materia Medica, Toxicology and Pharmacognosy

By WILLIAM MANSFIELD, A.M., Ph.D., Dean and Professor of Materia Medica and Toxicology, Union University, Albany College of Pharmacy, London. Henry Kimpton 1937. Pp. 707. 30s.

This book is said in the preface to be a "text and reference book on the therapeutics, toxicology, pharmacognosy, and posology of the official drugs in the United States Pharmacopœia XI and the National Formulary VI." The author is rather optimistic in hoping that it will prove of value to people of such varied experience and needs as physicians, pharmacists, and students of pharmacy, medicine, and nursing. The section of the book devoted to pharmacognosy, which fills more than two thirds of its total bulk, is mainly of interest to the pharmacist, since the medical student of to-day is not usually expected to recognise more than a very few crude drugs nor are physicians greatly interested in the ultimate origins of the preparations they use. Each crude drug is well illustrated by photographs and adequately described. The section on toxicology opens with a general discussion of poisons and of antidotes and details of individual poisons follow. This section again is unlikely to appeal to the physician for both symptoms and treatment are dealt with very briefly and without adequate indications of rationale. Some of the statements made are inaccurate as for example that atropine is a cardiac stimulant and that iodides "dissolve sclerosis" in arterio sclerosis. The book concludes with a list of drugs arranged both in order of doses and alphabetically, and a glossary of botanical terms is appended. The volume as a whole is more likely to give help to the pharmacist than to the physician, it is a valuable work of reference on pharmacognosy.

Quarterly Journal of Medicine

THE April number (Vol. VI, No. 22) contains the following papers—

TREATMENT OF ACUTE RHEUMATIC POLYARTHRITIS WITH CONCENTRATED ANTISCARLATINAL SERUM. By John Eason and Gurth Carpenter (Royal Infirmary, Edinburgh). Forty-four cases were treated, most of

them receiving no salicylates. They remained febrile longer than salicylate-treated patients, but suffered fewer relapses and recrudescences. The authors plead for further experimental use of serum in the hope that it may prove less unsatisfactory than salicylates.

THREE CASES OF IDIOPATHIC STEATORRHEA (Gey-Thaysen's Disease). By Erik Mogensen, Copenhagen. Detailed reports are given, and the relationships of this condition, cœliac disease, sprue, and pernicious anemia are discussed.

THE HÆMOPOIETIC ACTIVITY OF HUMAN LIVER. Part II. Achrestic Anæmia and Aplastic Anæmia. By John Frederick Wilkinson, Louis Klein, and Charles Amos Ashford (Manchester). Extracts prepared from the livers of four cases of achrestic anemia, two of aplastic anemia, and one of untreated pernicious anemia were tested for their content of anti-anæmic liver principle by injection into patients suffering from pernicious anemia in relapse. A typical reticulocyte response was obtained with all extracts except that from the liver of the case of pernicious anemia. This is proof that in patients dying of achrestic and aplastic anemias the liver contains normal amounts of anti-anæmic liver principle.

OBSERVATIONS ON THE SITE OF THE ANTAGONISTIC ACTION OF POSTERIOR PITUITARY EXTRACTS ON INSULIN HYPOGLYCEMIA. By Henry Cohen and Julius Libman (Liverpool). Posterior pituitary extract, given by injection in man (eleven experiments) causes an increase in the hyperglycemia that follows the ingestion of 50 g. glucose, and at the same time a diminution in the arteriovenous sugar difference—i.e., it antagonises the peripheral action of insulin. A similar peripheral antagonism, rather than a mobilisation of liver glycogen, will therefore explain the observation that posterior pituitary extract counteracts insulin hypoglycemia.

OBSERVATIONS ON SKIN SENSITIVITY IN ASTHMATICS AND CONTROL SUBJECTS. By R. S. Bruce Pearson (Guy's Hospital). Intradermal testing for skin sensitivity to one or more of four substances (horse dander, feathers, wheat, and egg white) was carried out on some hundreds of asthmatics and of control subjects. Skin sensitivity to the inhalants is fairly common among the controls, but in general the asthmatics give a higher percentage of positive reactions and a higher proportion of large reactions. Controls with past or family histories of "atopic" conditions occupy an intermediate position between the controls giving no such history and the asthmatics. Multiple sensitivity is common. Sensitivity to inhalants is greatest both in asthmatics and in controls, between the ages of 15 and 30.

SYSTEMATISED ATYPICAL AMYLOIDOSIS WITH MACROGLOSSIA. By F. Parkes Weber, Stanford Cade, A. W. Stott, and R. J. V. Pulvertaft (Westminster Hospital). One case is reported, in a woman of 48, showing enlargement of the tongue, pain in the finger tips which were hard and pinkish red, and pain in the legs resembling intermittent claudication. Microscopically, an amyloid change, with atypical staining reactions, and a nodular often eccentric distribution, was found in the walls of arteries and arterioles in tongue, finger tips, and gastrocnemius. Tongue muscle was also involved. None of the usual causes of amyloid disease was present. Ten other cases are cited from the literature.

ACHLORHYDRIA, ANEMIA, AND SUBACUTE COMBINED DEGENERATION IN PITUITARY AND GONADAL INSUFFICIENCY. By I. Snapper and J. Groen, D. Hunter, and L. J. Wits (from the Wilhelmina Gasthuis, Amsterdam, the London Hospital, and St. Bartholomew's Hospital, London). The authors describe six cases of a syndrome involving alopecia, hypogonadism, depression of metabolism, and anemia (macrocytic or microcytic) associated with proved or probable anterior pituitary lesions. Five of the patients had achlorhydria and they suggest that this is a result of the pituitary deficiency and in turn is the immediate cause of the anemia. They suggest a similar pathogenesis for the syndrome of pituitary disease, achlorhydria, and subacute combined degeneration known as pituitary pseudo tabes.

PLASMA PHOSPHATASE IN DISEASE. A Review. By Noah Morris and Olive D. Peden.

THE LANCET

LONDON SATURDAY MAY 29 1937

ROCKEFELLER BOUNTY

WITH the death of JOHN D. ROCKEFELLER at the great age of nearly 98 years an almost legendary figure has stepped quietly almost imperceptibly from the present into the past. The day will come when his life and endeavour will be written at full length for almost alone among the world's rich men he has found a lasting place in the human imagination. There was something heroic in his mould, something dramatic in the dénouement of his life which made him the very sign and epitome of his times and the last and almost tragic representative man of an age of individualism which has perhaps passed for ever. The plot of his life is briefly told. Unbounded and self-sufficing ambition, machine-like industry and efficiency, riches amassed unemotionally and perhaps ruthlessly until they surpassed the count of man. In the plenitude of power and wealth came the conviction born of a deep puritanism that what had been wrenched without mercy from the world must be returned to it with interest. The machinery of his great wealth was put in reverse and the redistribution was carried out with the same genius and unrelenting thoroughness which went to its amassing.

To medicine J. D. ROCKEFELLER has been the greatest monetary benefactor of all time not only as measured by the vast sums he expended but also by the skill and forethought with which the money was invested. He was fortunate in his choice of medical advisers or perhaps it would be fairer to say he was incomparably skilful in choosing them. As his great wealth had been acquired with a vision which went far beyond the limits of his own country, so it was spent without consideration for national boundaries. In this country alone the Rockefeller benefactions have been of unexampled magnitude and as we look back on them we are glad to think that it would be hard to suggest how they could have been made to better advantage. Thus the schools of London, Oxford, Cambridge, Edinburgh and Bristol were given princely sums for important and overdue schemes of expansion. In London outstanding gifts were those to University College and its Hospital, to the London School of Hygiene and Tropical Medicine and towards the building of the new university premises in Bloomsbury. Many other universities and medical schools

throughout both the British Empire and the world have likewise benefited according to their needs and deserts. In the United States itself there can be few medical schools or research institutions which are not indebted to the Foundation which for some ten years or so after the war seemed never to fail to meet every really deserving demand. The central monument of the Foundation is of course the Rockefeller Institute in New York. In this institute medical research in its widest sense was given a home and endowment on a scale paralleled by no other medical research institution in existence. The finest medical brains in the world were there attracted by the facilities for research. In this institute were conducted the work of FLEXNER on meningitis, of CECIL, DOCHERTY and AVEBY on pneumonia, the brilliant researches of PEXTON ROUS on transmissible tumours, NOGUCHI's spectacular if sometimes misleading investigations on syphilis, yellow fever, and bartonella infection. Here too KARL LANDSTEINER built up the great school of immunological chemistry, the fruit of which is now only beginning to be fully borne, while even wider in interest and passing far beyond the confines of medicine was the work of ARMAND CARREL on tissue culture and of JACQUES LOEB on the dynamics of living matter. Not the least inspired of the views of the Rockefeller Foundation was the realisation that there are no real boundaries to scientific knowledge and that the problem of medical education and research is not so much one of medical education as such but of education in general. Thus as the Foundation grew in experience and wisdom it became less purely medical in its activities and in England we profited by this outlook in the benefactions to libraries and to such institutions as the London School of Economics. Relatively few of the great sums distributed by the Foundation took the form of permanent endowments. It was considered sufficient to plant the sapling and leave it to others to make the salutary effort by tending it and bringing it to fruition, but the Foundation never went by hard and fast rules and where endowment was necessary and advisable it was arranged in the most elastic way possible. No institution and no individual who benefited from the Foundation ever felt the dead hand of formal charity. It is this tact and true understanding of the very spirit of learning and research which has earned the gratitude of the medical profession and which has been a model to countless benefactors who have followed the example of the great American philanthropist. To the medical profession J. D. ROCKEFELLER will always be something more than the wizened and eccentric old gentleman who gave new dimes to pauper children—something more too than the richest man in the world whose name became as proverbial as Cæsar. For the medical world perhaps alone is in the position to realise the grandeur of the drama of restitution which was played out in his life. In the midst of the murkiness and cruelty of the arena of nineteenth-century commercialism when he stood a peerless victor he saw a vision and of that vision was born an ideal.

FOOT-AND-MOUTH DISEASE

THE task of investigating this important and damaging disease of livestock has proved to be one of exceptional difficulty. As long ago as 1924 the British Foot-and-Mouth Disease Research Committee was formed "to initiate, direct and conduct investigations into foot-and-mouth disease, either in this country or elsewhere, with a view of discovering means whereby the invasions of the disease may be rendered less harmful to agriculture." The fifth progress report¹ now published covers work carried out during the years 1930-35, and despite its high standard no dramatic solution of the problem set in the terms of reference has been reached. Needless to say, as a result of prolonged and intense study a better definition of the disease and its problems has been obtained and the presence of a standing scientific committee must have helped the Ministry of Agriculture even in carrying out with efficiency the older methods of control. The educational value of the research has been considerable, notably in the opportunities afforded to British veterinary research workers of mastering the difficult methods of virus study, the veterinary study of viruses in this country has advanced to the forefront during the last few years from a position of insignificance.

That foot-and-mouth disease may be caused by several closely allied but serologically different viruses makes the difficulty of prevention by any type of vaccine almost insuperable and the failure to work out an effective method of inoculation represents the major disappointment of the investigation. Valuable information has, however, been accumulated as to the resistance of the virus to physical and chemical influences. It has been shown, for instance, that the virus may resist cold-storage temperatures for prolonged periods and that it can be dried on fabrics and other materials and retain its virulence. These observations have led the Ministry to introduce orders compelling the cooking of animal products before feeding them to livestock and to make certain requirements as to wrapping materials. These regulations should eliminate some at least of the outbreaks. Important advances have also been made in the simplification and effectiveness of disinfection methods. Increasing reliance is now being placed both here and in Germany on alkalis, such as washing soda or dilute caustic soda, in disinfecting contaminated objects and premises. The possibility of the disease being imported into this country by birds has often been discussed, but the recent work of the committee has shown that though certain kinds of birds, such as ducks and gulls, can be experimentally infected, their susceptibility is low and they seem unable to propagate the disease by contact. Evidence that rats or other rodents take any serious part in the propagation of the disease has also been wanting. Of recent observations undoubtedly the most interesting is that hedgehogs are not only

highly susceptible to experimental infection but can also acquire the infection naturally. Not only were infected hedgehogs able to infect one another by contact but they appeared to be able to transmit the disease to a cow when placed in the same stall. Obviously much more information is desirable on the extent of infection among hedgehogs and also on the experimental course and character of the disease in these animals, but even if, as seems likely, the hedgehog is of no special importance in the natural propagation of the disease among livestock, the discovery of a highly susceptible and easily obtainable small mammal may prove to be a great help in future study. Further work has confirmed the view previously held that arthropod vectors are of little, if any, significance in the transmission of the disease.

From the purely practical standpoint it may be felt that these are meagre results to be gleaned from so prolonged and costly an investigation, but the by-products of the research have a definite value of their own. The high standard of scientific work recorded in this and previous reports on the subject makes it clear that if the practical problem of preventing foot-and-mouth disease has eluded solution it is not due to any lack of efficiency and devotion on the part of the investigators.

THE WAYWARD PEDESTRIAN

THE report of the Commissioner of Police of the Metropolis shows that, after a reduction in 1935 of the number of persons killed or injured in traffic accidents, there has been an increase in 1936 and the number killed or seriously injured has risen to 7363. The figure for pedestrians has slightly fallen, but they and pedal cyclists still make up roughly 70 per cent of the total of 57,325 killed or injured, and a special analysis of 35,851 accidents during eight months led to the assessment of 83.5 per cent in which pedestrians were regarded as to blame, another analysis for the whole year produced a figure of 76.4 per cent. Among pedestrian children there were 5459 casualties, 89.9 per cent of the total, for which they themselves were deemed responsible.

Such phrases as "to blame" and "deemed responsible" are perhaps unavoidable, but they tend to obscure the fact that modern traffic is demanding from mankind a new set of responses and reactions for which his previous experience has not prepared him. "Hesitating in traffic" accounts for 5.4 per cent of accidents to blame worthy pedestrians and is, especially for the very young and the old, a form of behaviour not likely to be eliminated even by a strict application of the law of the survival of the fittest. "It may be irritating," says Sir PHILIP GAME in his report, "to have to walk warily and to be thinking constantly of traffic when there are much more interesting things to think about", but it may be not only irritating, it may be impossible, to maintain a forced attention which, unlike the process of avoiding collision with fellow pedestrians, cannot be relegated to centres below the level of the cerebral cortex. We must, in short, be ready to

¹ Ministry of Agriculture and Fisheries. Fifth Progress Report of the Foot and Mouth Disease Research Committee. London, 1937. H.M. Stationery Office. 7s.

recognise difficulties and limitations in the demands to be made upon the conscious control of human actions in these new circumstances and to accept the need for restrictions which would not be necessary if we all could be sure of doing the right thing at the right time. There are however helping to swell the distressing totals human factors dependent not upon the inadequacy of perception and reaction but upon the positive development of harmful behaviour. The sense of power and the thrill of speed called forth by the command of a modern car become dangerous incentives whose results can be studied in newspaper reports of fatalities. On the other side exists a resentment against speed and the domination of weight and power which expresses itself in unreasonable behaviour. The objection of cyclists for example against carrying rear lights was supported by the rational argument that if rear lights were compulsory then the cyclist whose light failed was in far more danger than he is at present when the motorist is compelled to watch for the unlighted machine. Behind this objection there probably lay the unexpressed desire not to make things more easy for the motorist. It has been said that many a dead man had the right of way but the vindication of his claim has brought little of value to him or to posterity. Add to this the British characteristic whether for good or evil of a preference for independence and we can understand Sir Philip's suggestion that something might be done to check by law the most flagrant of the suicidal wanderings of pedestrians. It seems unquestionable that further measures of control are necessary. The American prohibition of crossing a road diagonally (called jay walking) might help to set up a new and safer behaviour to the advantage of all users of the road and both drivers and pedestrians are familiar with the indecision at a marked crossing called forth by the pedestrian's doubt whether an oncoming car intends to give him the right of way and the driver's irritation consequent upon his need to waver on the hesitant one. Some means might be devised of indicating automatically the intention of the driver. These and other measures call for trial but there remains an uncomfortable feeling that perhaps the greatest danger of all is of becoming reconciled to a casualty list equal to that of a rather important war.

EXPERIMENTS ON THE AETIOLOGY OF LUNG TUMOURS

SINCE the beginning of the experimental production of cancer with carcinogenic substances it has been believed that the carcinogenic effect of these substances is confined to the site of application—usually the skin. This belief is probably correct for the skin is the site at which cancer of the skin hardly ever develops outside the area treated with the carcinogen. But the production of mammary cancer in both males and females by cutaneous application of oestrogenic hormones has shown that cancer can develop at a site remote from the skin to which they are applied even

although the skin itself never responds to these hormones by carcinogenesis. This effect is not restricted to animals from a highly inbred strain with a high incidence of mammary cancer in the females as has been suggested but has been observed in animals from an inbred strain with a low incidence and in mice of mixed strains with a low incidence of mammary cancer in the females. It is seen that the oestrogenic hormones which in physical properties and in chemical constitution are closely allied to such carcinogenic substances as benzpyrene or dibenzanthracene may be absorbed by the skin without inducing a cancer locally but may have a carcinogenic action on one particular tissue remote from the site of application—the mamma—to which they travel in the blood.

These new facts have reawakened interest in the occurrence of lung tumours in mice whose skin has been painted with tar. This sequence had been noted by a number of observers beginning with MURPHY and STURM but hitherto has not been thought significant. The reasons for ignoring it were first that it is not of universal occurrence being seen most often in stocks of mice that developed lung tumours spontaneously, secondly that the spontaneous lung tumours of mice are mostly benign, and in records of growths in the lungs of mice subjected to tar painting a clear distinction has seldom been made between benign and malignant growths. To account for these tumours arising in an organ to which tar had not been directly applied it was often assumed that the tar had reached the lung by inhalation. That the inhalation of dust particles coated with tar may give rise to malignant lung tumours in mice has been demonstrated by AROYLE CAMPBELL.¹ Recently however, CLARA LAYCH² and subsequently ANDERVOORT³ have shown that subcutaneous injection into mice of dibenzanthracene dissolved inlard which is followed by development of sarcomata at the site of injection will also produce lung tumours. This effect was seen in a mixed strain of mice and in a highly inbred strain A which showed a high incidence of spontaneous lung tumours. In this latter strain the lung tumours arising after the injection of dibenzanthracene appeared more rapidly and in greater numbers than they would have done spontaneously. In seven other highly inbred strains which do not show a high incidence of spontaneous lung tumours the subcutaneous injection of dibenzanthracene did not produce lung tumours although it was followed by the appearance of what ANDERVOORT calls spontaneous tumours (presumably sarcomata) under the skin. Since P. R. PEACOCK has ingeniously demonstrated that such carcinogenic substances as dibenzanthracene when injected subcutaneously are carried away rapidly from the site of injection by the blood stream and thus reach internal organs the appearance of lung tumours after cutaneous or subcutaneous application is easily explained. But why the

¹ Campbell, J. A. (1924) *Proc. Roy. Soc. Med.* 18, 24.
² Laych, C. (1931) *Proc. Roy. Soc. Med.* 24, 21, 22, 23.
³ Andervoort, H. R. (1932) *Proc. Roy. Soc. Med.* 25, 212, 213.

carcinogenic action of these substances focused on one organ—in this case the lungs? We have to postulate a special organ susceptibility to cancer, which varies in different strains and even in different mice, and it becomes clear that there is a close similarity between the production of lung tumours by injecting dibenzanthracene and of mammary tumours by painting the skin with oestrogenic hormones. The findings of ANDERVONT greatly complicate the problem of the aetiology of lung tumours in man. For we can no longer confine our attention to carcinogenic agents capable of reaching the lungs by inhalation, but must also consider the possibility of carcinogenic agents reaching the lungs by the blood stream.

In one paper ANDERVONT refers to the growths in the subcutaneous tissue and in the lungs as "subcutaneous tumours" and "lung tumours" without giving details of their benign or malignant nature, but it can be taken for granted that all the subcutaneous tumours were sarcomata. In another paper he gives illustrations of some of

these tumours, which establish their malignancy, and he describes the successful serial transmission of four lung tumours obtained in Strain A by dibenzanthracene and of one spontaneous lung tumour from a mouse of the same strain. The last-mentioned tumour was an adenocarcinoma and retained its structure in the course of propagation, but in three other growths the morphological appearance underwent a change which ANDERVONT describes as a sarcoma development, similar to that observed by M. HAALAND in 1908 in a mammary carcinoma. Among the skin tumours of mice obtained by tar-painting there have been many, composed of spindle cells and having the morphological appearance of a sarcoma, which on closer histological analysis proved to consist of cells which were derived from the epithelium but had assumed a spindle shape. It is not clear why ANDERVONT has not considered this possibility, and until it is excluded there must be some doubt whether the change he has observed really represents the development of a sarcoma in a carcinoma.

ANNOTATIONS

THE COST OF SALVAGE

RECENT questions in Parliament elicited the fact that in an average year a sum of rather over two million pounds is expended on the medical inspection and treatment of children in the public elementary schools of England and Wales, and a like sum on the education and treatment of children of the same age in special schools. In each case the expense is met in equal parts by the Exchequer and the local rates. And it was evident from the form of the questions that not everyone is satisfied of the justification for expenditure on this scale. The general work of the school medical service needs little extenuation, it is an integral part of the campaign for national fitness, less obvious to those without inside knowledge is the justification for the heavy cost of special education and treatment of the blind, the deaf, and the mentally defective. Practically speaking these defects cannot be removed, though they may be arrested, the victims cannot be made normal, and yet the cost of their treatment and education is twice or thrice as great as that of those who are of so much greater value to the community. The answer lies in the word "training," for though the defects themselves may be permanent the resulting handicaps can be so lightened that after special training for a few years the deaf can communicate with their fellows, the blind can read and write, and the mentally defective acquire stability, while the majority of each group is taught occupations which save them from being in misery themselves, a hopeless drag on the education of the normal, and a life long burden on the community. Even with the mentally defective, experience in areas like London and Birmingham shows that about half the known ex-pupils are more or less self supporting, and less than a fifth are inmates of any kind of public institution. In schools for the blind and deaf the results are better than this. The process may not be the creation of a national asset, as is the prevention and cure of disease in the more normal, but it is the liquidation of a debt. Looked at merely from the economic aspect a long view reveals the fact that a generous outlay wisely dispensed is sound financially, as in the modern legislation for the training

of the blind, wisdom and humanity go hand in hand. To ignore the existence of defectives—physically and mentally—would be foolish as well as cruel and proper provision for them is inevitable. It must be realised also that the more expensive measures often give the better results and are in the long run the least wasteful. With the higher type of defective a little more spent on treatment and training for a few years may save the expense of upkeep for a life time. The principle must be applied with discretion and, in fact, precautions are taken to prevent waste of effort in attempts to train the untrainable, the selection of suitable cases falling mainly on the medical officers. The work of prevention, cure, and salvage is admittedly incomplete, but as far as it goes it is well carried out and well worth the money.

GASTRIC ACIDITY AND CHRONIC ALCOHOLISM

ABUSE of alcohol has been for long regarded as a cause of impaired gastric secretion. Statistical data upon this point have, however, been scanty, and in recent years it has been found that increased acid secretion may be present in certain types or in certain stages of gastritis. Information on the gastric acidity of 105 alcohol addicts, all of whom had consumed large quantities of alcohol either daily or periodically over months or years, has been collected by P. M. Joffe and N. Jolliffe.¹ The alcohol test-meal was used, and if free acid was absent in the first three samples, histamine was given in addition. Of the 105 patients examined, 77 men and 28 women, achlorhydria was noted in about one third, that is, no free acid was secreted after administration of histamine. Of the remainder about half showed a gastric acidity below the average normal value, and half an approximately normal secretion. Thus incidence of achlorhydria is about three times as high as would normally be expected in a series of control subjects of the same age and sex distribution. These figures might at first sight seem to confirm the view that alcohol per se is a frequent cause of achlorhydria, but certain difficulties arise in accepting this explanation. Many of the subjects examined

¹ *Amer. J. med. Sci.* 1937, 193, 501.

suffered from complications. The authors state without giving any explanation of what seems a remarkably high incidence that 26 per cent. had pellagra and 70 per cent. polyneuritis (including 22 also having pellagra). Of those addicts not suffering from one or both of these complications only 15 per cent. were found to have achlorhydria, an incidence which is only very slightly higher than might normally be expected—i.e. 12 per cent. Amongst the polyneuritis patients 20 per cent. showed absence of free acid and amongst the pellagrins 52 per cent. The amount of alcohol consumed and the length of time it had been taken did not appear to be concerned in these differences, and nine of those with normal gastric acidity had drunk from 8 to 24 ounces of whisky daily for periods up to 40 years. The association of alcohol excess, achlorhydria and proved lack of vitamin B was somewhat striking but other workers have shown that in hereditary achlorhydria is not a frequent finding.

No relationship was found between the degree of anaemia or of liver dysfunction (as far as this could be judged and tested) and the frequency of achlorhydria and the authors suggest that some factor closely associated with vitamin B may be concerned in the prevention of achlorhydria; this they refer to as the achlorhydria preventive factor and regard as distinct from either vitamin B or the pellagra preventive fraction. It is not necessary to postulate such a factor when recognising the importance of dietetic factors in the maintenance of normal gastric secretion, thus lessening the significance of the direct effects of prolonged irritation from abuse of alcohol in reducing this secretion. If a man must drink to excess it would seem that he will better preserve his gastric acidity if he takes his wine with bran.

THE BLOOD PICTURE IN INFANCY

MacKay's classical study of the haemoglobin level in infancy published in 1931¹ has been followed by similar large scale investigations in all parts of the world. Two recent surveys, one from Gothenburg and the other from Aberdeen bring out further important facts about the cause of the so-called nutritional anaemia of infancy. Dr Nils Faxén² using well controlled technique and statistical methods of analysis studied all the red cell elements in 374 infants which he considered were in every way healthy. They all weighed at least 3000 grammes at birth; they were breast fed with the addition of vitamins until six or seven months when mixed feeding was gradually begun and they all lived at home under the care of visiting nurses from the children's care centre. All children who had had any illness were excluded. His curve for haemoglobin levels during the first year of life is considerably higher than that of other observers though he notes the same tendency to a lower level of red cells and haemoglobin and smaller cell size that has been found by all workers in the second six months. Faxén himself attributes his satisfactory figures to the careful selection of his material and his children must be regarded as healthy infants living under the best conditions. He found no lowering of haemoglobin during the winter months as others have done and believes this is explained by his exclusion of children showing any infection. The truth of this conclusion is only too obvious from different results obtained by Dr Fullerton³ working with less carefully selected

children in Aberdeen. He found subnormal haemoglobin levels in 87 per cent of 298 infants from poor homes between the age of nine and twenty-two months and he concludes that this anaemia is due mainly to iron deficiency dependent on low birth weight, artificial feeding and infective illness. The part played by even mild infections originally suggested by Josephs⁴ is well brought out. A group of 26 infants aged six to twenty-two months was observed for a year in an institution under excellent dietetic and hygienic conditions. The haemoglobin level was lowered with unfailing regularity after each infection however mild even pyrexia associated with teething was effective. Thus fall occurred even when iron was already being given and no response to therapy was made until several weeks after pyrexia had subsided. Why fever causes a fall in haemoglobin is unknown. Possibly the sum of unobserved and mild infection is responsible for the slight fall seen even in Faxén's admirable children. Unlike other workers, Fullerton does not regard maternal iron deficiency as likely to be a significant aetiological factor. From theoretical calculations he decides that this anaemia of infancy cannot justifiably be called "nutritional," since during the first nine months deficiency of iron intake has little effect on the haemoglobin level. On theoretical grounds alone his conclusion that the importance of a deficient iron intake in infancy can be at present only a matter of conjecture is possibly correct but the practical fact demonstrated by MacKay remains—namely that infants given iron gain weight better and resist infections better than children not given iron. Fullerton himself holds that all children should be given medicinal iron after even mild infections. Since mild infections seem inevitable under the present conditions of town life and over-crowding and the healthy babies fulfilling Faxén's ideal criteria are probably rare in this country it seems wise to attempt the widespread prophylaxis of the anaemia of infancy whatever its cause by the use of medicinal iron.

FRIENDLY GIVING

Not only do we help to support the needy by grants of money food coal and clothing but by advising them when in difficulties or ill-health by providing medical or dental attention invalid comforts and medical appliances we arrange for holidays and even for Christmas gifts through our special Fund. We recommend suitable schools for the young help with fees and outfits and advise as to future careers. We also try to reconstruct those lives which have been shattered by bereavement lack of means and ill health.

These words are quoted from the annual report of the Ladies' Guild of the Royal Medical Benevolent Fund and the detailed report of the various committees show how well and truly this work is being carried out. It is a record of personal service of which the guild may well be proud. The hon. visitors have paid more than 225 visits to beneficiaries during the year and the cases committee has dealt with 402 persons while aid and tance and supervision have been given in the education of 66 boys and girls. The clothes committee reports a successful year with 681 parcels sent to 370 beneficiaries in spite of the extra work entailed by a flood in their premises. Three new branches of the guild have been opened at Weston-super-Mare East Devon and Gray Thurrock and others are in view. But the need is very great and the work of the guild and society is always increasing since their help is not limited to any

¹ Mac Kay H. M. St. Goodfellow, L., and Hill A. B. (1931) *Spec. L. p. Ser. Med. & Comm. Lond.* No. 137.
² Faxén N. (1931) *Acta Paed. Scand.* 19 Suppl. 1.
³ Fullerton H. W. (1931) *Arch. Dis. Child.* 12, 91.

⁴ Josephs H. (1931) *Brit. J. Hyg.* 11, 95, 272.

particular district or to those who have previously subscribed to the funds. Subscriptions, donations, and gifts of clothing are therefore urgently required and should be sent to the guild at Tavistock House North, Tavistock square, London, W C 1

INJECTION TREATMENT OF HERNIA

THE treatment of hernia by injection is evidently becoming popular in the United States. Individual clinics are now able to report the results in many hundreds of cases, and it appears that, with carefully standardised technique, the fear of serious complications need no longer be deterrent. The treatment was introduced into the surgical department of the University Hospital of Minnesota in 1931, and in a recent symposium¹ A F Bratrud and F S McKinney relate their experience of no less than 700 cases of hernia treated during five years. Of these, 300 were selected for statistical study because they had had at least six injections each and had been admitted to the clinic for treatment before 1936. In the greatest number the hernia was indirect inguinal, a few were scrotal, and there were also some indirect and recurrent. In all, 83 per cent of the patients were cured. Among factors in success the fitting of the truss and the coöperation of the patient in its use rank high. At the Minnesota University Clinic the fitting of a new truss is part of the routine, it has to be worn day and night during treatment, and its use is not discontinued till six months after the last injection. The selection of a sclerosing solution has also been given very careful attention and Bratrud reports that the best results are now obtained with the solution known as Proliferol with the addition of two drops of a phenol thuya mixture to each cubic centimetre. Proliferol is a distillate of several vegetable drugs to which have been added tannic acid, benzyl alcohol and thymol in various strengths up to 1 per cent. The phenol thuya mixture contains phenol 50 parts, alcohol 25, and Lloyd's specific tincture of thuya 25. Either solution can be employed alone, or they can be injected alternately or in combination. C O Rice of the Minneapolis General Hospital reports favourably on a mild soap solution, which causes less pain and requires no preliminary injection of a local anaesthetic. He claims cures in 379 patients with 445 hernias, no case being pronounced cured until there has been no impulse for six months after the last treatment and until the patient has been without his truss for at least four months. Another preparation used is sodium psyllate, sold under the trade name of Sylnasol, it is a solution of low viscosity that spreads through fascial planes over a wide area.

Martin Biederman² of New York classifies the causes of failure under three headings—unsuitability of the truss, failure of coöperation, and unsuitability of the solution—and he points out that all three factors are controllable. The selection of cases still presents some difficulty, especially at this stage, because the protagonists of the method naturally want to keep an eye on their statistics of results. The indirect inguinal hernia gives the best results, but the value of the method is really more apparent in cures of the much more difficult hernias and in cases where operation has repeatedly failed. Opinion seems to be divided as to whether the method is applicable to femoral hernia, and Bratrud holds that femoral and umbilical hernia should not be treated by injection unless a truss completely relieves the

symptoms. Sliding hernias and irreducible hernias are not to be treated by injection. Its use for patients in whom operation is dreaded because of respiratory or cardiovascular disease is likely perhaps to make most appeal to surgeons in this country.

Complications have been remarkably few, and the great majority of patients do not require rest in bed, even for a few days. The commonest complication seems to be swelling of the spermatic cord, and fears have been expressed about sterility, but after a special investigation C E Read decides that there is no such danger. Atrophy of the testis has not occurred in the Minnesota clinics and strangulation supervened twice only. With faulty technique the sclerosing fluid may be forced into the peritoneal cavity, and lower abdominal pain is a signal that injection should be stopped. Ordinary precautions should preclude the intravenous injection. Excessive local reaction, with sloughing and abscess-formation, does not seem to occur with the use of the solutions now recommended, but as Bratrud says, it must always be borne in mind that there is a definite technique, and that unless this is learned great harm may be done. The placing of the solution at the desired site may not be so easy as the descriptions suggest. Thus N N Crohn³ says that he experimented with injections of methylene blue in cases prepared for operation and at the first few attempts was astonished at the failure of the injected solution to be at the expected sites. With experience, however, accuracy can be assured. Crohn says that the aim of injection should not be to produce a large mass of scar tissue filling a large gap. Scar tissue is vulnerable because it is inelastic, and repair by a small amount of fibrous tissue at the right place is more likely to give permanent cure, although the larger scar may give a fallacious sense of security.

AN IMPROVED TOMOGRAPH

In thick parts of the body the interpretation of radiograms is often rendered difficult owing to the superimposition of shadows. This is especially true for the chest, where shadows arising within the lung are partly or completely masked by those cast by the bony and muscular chest wall. Since 1921 attempts have been made with increasing success to photograph a selected plane in the interior with the elimination of all other planes. This technique is now generally known as "tomography" (τεμνειν, to cut), the terms "planigraphy" and "stratigraphy" being also used. The method is based upon the principle of similar triangles. The distance from the film to the plane or stratum which it is desired to investigate is first determined. During the exposure tube and film move in opposite directions, being coupled so that their movement takes place about a pivot in the selected plane. The result is that objects in this plane are sharply outlined on the film since they are projected on to the same part of the film during the excursion of the tube and film. Objects in other planes are blurred in varying degrees up to complete extinction according to their distance from the plane selected. Thus, for example, a clear view of the pulmonary vessels can be obtained with complete elimination of the shadows of the ribs. In Grossmann's apparatus, a photograph of which was reproduced in a recent article⁴ in our own columns by McDougall, the tube moves at the upper end of a pendulum while the film moves at the lower. Twining has now ingeniously devised a much simpler

¹ Ann Surg March 1937 p 321
² Med Rec March 17th, 1937, p 239

³ J Amer med Ass Feb 13th 1937 p 540
⁴ McDougall, J B (1936) Lancet 2 185

and less expensive method.⁴ This is an adaptation of the movement of the tube and of the Potter Bucky under-carriage already provided in the X ray couch in common use. Tube and under-carriage are coupled so as to provide the movement required. The tomograms published by Twining appear to us to be at least the equal of those of Grossmann. At this stage in its development the ultimate value of tomography in practice cannot be assessed. Its application must however necessarily be limited by the fact that few structures lie in one plane for any distance. Nevertheless sufficient progress has been made to establish its worth in certain situations notably the lungs where for instance it can reveal an abscess invisible in the ordinary radiogram. It also promises to be of value in certain hitherto inaccessible regions of the skull and spine despite the fact that it fails to exhibit the cancellous tissue of bone. The interpretation of tomograms will however always call for judgment and experience in a high degree.

THE MORTALITY OF JEWS

In the literature of racial susceptibilities a good deal of attention has been paid to the incidence of disease and mortality from different causes amongst the Jews. An addition to this subject matter has been made by Drs. Franz Goldmann and Georg Wolff who have published a careful study⁵ of the mortality experienced by Jews in Berlin during two periods of years 1924-26 and 1932-34.

For the earlier years population figures are available by sex and age so that death rates at ages and standardised rates can be calculated. The importance of the latter is shown by the fact that although the crude death rate of the Jewish population is about 20 per cent. higher than the rate of the total population of Berlin their standardised rate is 10 per cent. below. The Jewish population contains proportionately more persons at the two extremes of life where mortality is highest. In the latter years 1932-34 only the total populations are available so that the comparisons of the mortality of Jews and non-Jews are limited to crude rates which the authors interpret with proper caution. The death rates at ages in 1924-26 from all causes show the Jews in a very favourable position in the first few years of life holding a slight advantage from ages 17 to 40 but unfavourably placed at ages over 60. Their infant mortality rate is particularly low 40 per 1000 live births in 1932-34 compared with the figure of 61 for the total population. From infectious diseases their mortality experience is considerably more favourable than that of the non-Jewish population their advantage being particularly striking in the death rate from tuberculosis. According to the figures for 1924-26 the standardised rate of the Jews from this cause is less than half the corresponding rate of the non Jews.

The crude rates of 1932-34 also favour the Jews but to a much smaller extent. This narrowing of the difference in a short space of time between the two races suggests to the authors that the lower mortality of Jews is likely to have been due rather to more favourable economic circumstances amongst the Jews than to a greater degree of immunity peculiar to the race. From cancer they show a slightly lower death rate than the non Jew and some considerable differences in the sites mainly concerned. For instance in the

total male population 42 per cent. of the deaths were referred to the oesophagus and stomach in the Jews only 27 per cent. in the total female population 10 per cent. of the deaths were referred to the uterus in the Jews only 9 per cent. The higher death rate of the Jews from diabetes which has often been commented upon is confirmed by these figures. The standardised death rate of males exceeds the rate of all males by 42 per cent. of females by 75 per cent. On the other hand the Jewish rates at under 40 are below those of the total population. It is not until age 50 is reached that their experience becomes unfavourable and at ages over 60 the rates of both sexes are approximately double the rates of the general population of Berlin. They also show distinctly high death rates from diseases of the circulatory system and arterio-sclerosis, and a relatively unfavourable experience as regards suicide. Between 1924-26 and 1932-34 their crude death rate from suicide has increased to an appreciably greater extent than is apparent amongst the non-Jewish population.

How far these various differences can be ascribed to racial characteristics it is difficult to determine. Economic status, personal hygiene, occupations and customs may all play their parts. Goldmann and Wolff fully recognise this and plead for the further collection of data in Palestine and elsewhere to aid in the interpretation of their own excellent analysis.

EXCESSIVELY RAPID HEARTS

For the human ventricle to beat at a rate of 300 per minute seems to be very rare. Only three cases of a ventricular rate exceeding 300 have been reported and only sixteen of a rate above 280. Experimenting with animals, Lewis and others found that when the auricles of the mammalian heart were stimulated to rates higher than 300 per minute the ventricles did not respond and dropped beats or a two to one rhythm ensued. Lyon¹ reports the case of a negro infant aged 4½ weeks with acute streptococcal meningitis, in which the ventricular rate recorded electrocardiographically ten days before death was from 310 to 313 per minute. At autopsy the heart appeared normal to the naked eye and microscopically it showed no sign of infection or fibrosis. Copies of the electrocardiogram were submitted to a number of cardiologists both in America and in Europe nineteen of whom diagnosed paroxysmal auricular flutter with 1 to 1 block and intraventricular block due to myocardial fatigue. Six others agreed but could not with certainty rule out the possibility of some other diagnosis. Six others diagnosed paroxysmal ventricular tachycardia and one paroxysmal auricular tachycardia. In 12 of the 16 cases collected from the writings the outcome was a return to normal rate. In one of these a case of exophthalmic goitre the return to normal followed thyroidectomy. Of the remaining 4 the outcome in one case was not stated and 2 other patients died. Of these one who died on the third day after the onset proved at autopsy to have a widely patent foramen ovale and congestion of the cardiac vessels; in the other who died a year after the onset myocarditis dilatation and hypertrophy were found post mortem. The type of arrhythmia was diagnosed as paroxysmal auricular tachycardia in 11 of the cases, as auricular flutter in 4 and as paroxysmal ventricular tachycardia in the remaining one. It seems that in the absence of pre-existing heart disease or congenital abnormality or other grave

Twining F. W. (1937) *Brit. J. Radiol.* 10, 322.
Toll und Todesursachen unter den Berliner Juden. Reichsvertretung der Juden in Deutschland. Berlin-Charlottenburg, Kantstr. 139.

¹ Lyon J. A. *J. Am. med. Ass.* April 21th, 1931, p. 12.

extracardiac disease, an excessively rapid heart beat is not in itself of serious import, but how long elapsed before normal rates were re-established in these cases, nor how long they remained normal, is not stated

GASTROSTOMY

RAPID deterioration after gastrostomy is one of the disappointments of surgery. It is all the more regrettable if the gastrostomy is part of an operation from which a cure is hoped, as for example in radical excision of the œsophagus. But even when gastrostomy is purely palliative in intent, permission to perform it has been obtained by promises to the patient that he will feel better when properly fed. Discussing the reasons for failure, E S J King¹ concludes that gastrostomy should not be attempted if the patient is in an advanced state of dehydration and malnutrition, especially in the presence of pulmonary and circulatory complications. This contra-indication does not apply to cases of sudden complete œsophageal obstruction, but to chronic cases in which the patient has gone steadily downhill. Death from infection of the wound and from peritonitis may follow the operation, and it only hastens an end already not far off. If parenteral administration of fluid does not bring distinct improvement in the general condition, gastrostomy is best avoided. The nature of the operation performed is also important. King divides all types of gastrostomy into two classes—those that result in a narrow track between the stomach and the skin surface, lined (in part at least) by granulation tissue, and those that give a track lined by gastro-intestinal mucosa. Gastrostomies of the first class are always liable to stenosis of the opening, and if the tube is left out, for reasons of comfort or because normal swallowing for a time returns, its reinsertion may be difficult. In the Janeway gastrostomy, which King has found most satisfactory, the opening is fashioned from a flap of stomach wall, cut in the transverse axis of the stomach, with its base at the greater curvature. The operation is not severe, it can be performed under local anaesthesia, and need not take longer than half an hour. The preoperative administration of fluid has already been mentioned, and King is keen about it. By far the most important consideration, however, is the choice of a suitable diet. He says, in effect, that many gastrostomy patients are suffering from severe starvation. It is necessary that the diet requirements in calories should be estimated and that the estimate should be adhered to. There is a tendency to overload the diet with fat, and to omit certain essential amino acids. Salts may be deficient, and it is not unknown for a patient fed by gastrostomy to develop scurvy or pellagra. In King's experience of 50 gastrostomies, the administration of solid food, through a grease gun, has had such obvious advantages that he strongly advocates it. The completeness of the diet is much more easily assured, the food is more readily prepared when the patient goes home, and the meals provide a degree of gastric comfort quite different from anything obtainable from a fluid diet. The importance of adding saliva and of controlling the acidity of the stomach contents are points he mentions.

THE PHYSIOLOGY OF SLEEP

ALL will recognise the fascination of the subject. Prof E D Adrian, F.R.S., chose for his John Mallet Purser lecture at Trinity College, Dublin, last week. The fact that we need to sleep—that the central

nervous system must cease work after a time—is not in itself surprising, but very remarkable is the process of falling asleep, and still more (he thinks) that of waking up again. The behaviour of different animals varies according to whether they have one rest period or several. The monophasic ringed snake rises at noon and goes to bed at 1.30 P.M., the polyphasic rabbit has 16–20 regularly spaced rest periods in the twenty-four hours. Babies are polyphasic, adults monophasic, but after the first few hours of deep sleep adults have several lighter periods. As the brain remains at rest in normal sleep it becomes more and more capable of activity, whereas the narcotised animal does not get the same refreshment. "What happens in the brain," asked Prof. Adrian, "when we cease dreaming and become our own masters again? Is there a particular region which comes into play to establish full integration, or is the half awake state due to a general low level of excitability in the cortex?" Naïve introspection suggests that there is some unifying part of the mind which is in action only when we are wide awake, and electrical methods should make it possible eventually to record the activity of different parts of the brain from moment to moment. How is this awareness brought into action when we are asleep? A loud noise in the street may not arouse us, but a child's cry at the end of the passage may make us instantly awake. Somewhere then, as Prof. Adrian put it, there must be a controlling region which decides the relative importance of the different incoming messages, and the tendency is to locate this in the diencephalon. "The induction of the sleepy state by stimulating the diencephalon shows that a change in this region can diminish the general level of nervous integration in the brain. From this it is a short step to the idea of a diencephalic centre regulating the flow of impulses to the cortex, directing attention when the brain is awake—in fact a region specially concerned with the neural activities which are essential to consciousness." He quoted Penfold as pointing out that the neurosurgeon can remove large areas from the cortex of conscious patients without their being aware of any change, whereas lesions of the diencephalon commonly involve a total loss of consciousness. The cortex judges whether the noise is important, the diencephalon, if need be, spreads the neural activity which "wakes" the sleeper. Hess, however, has shown that stimulation of the diencephalon will produce not increased vigilance but sleep. The question arises whether sleep is "a state in which the central nervous system has been reduced to a passive inactivity which tends to perpetuate itself," or whether there is not a constant activity in one region maintaining an inhibition everywhere else.

Prof. Adrian's lecture will appear in due course in the *Irish Journal of Medical Science*.

WE publish on another page an account of the evacuation of Basque children from Bilbao last week, written by the two doctors sent to Spain by the National Joint Committee for Spanish Relief. The committee, which has undertaken the care of the children in this country, may be addressed at 35, Marsham street, Westminster, London, S.W.1.

THE Minister of Health has announced the personnel of the interdepartmental committee he has set up, under the chairmanship of Mr. Norman Birkett, K.C., to inquire into the prevalence of abortion and to consider what steps can be taken to mitigate its dangers. The names are given in our Parliamentary Intelligence (p. 1313). They include two medical women and four medical men.

¹ *Brit. J. Surg.* April 1937, p. 749.

PUBLIC HEALTH

RAPID DETECTION OF
B TUBERCULOSIS IN MILK

By MARY L. COWAN, Maitland M.B. Toronto

(From the Department of Bacteriology and Preventive Medicine University of Manchester)

THE routine examination of milk for the presence of tubercle bacilli is done in this laboratory by biological test—i.e., inoculation of guinea pigs—or by microscopic examination or by both methods. All bulk samples of milk—i.e. mixed milk from a herd or part of a herd—are spun in 50 c.c.m. amounts for 15 minutes at 3500–4500 r.p.m. and the deposits inoculated into two guinea pigs. If the sample of milk has come from a single cow a film is made from the deposit before the remainder is inoculated into two guinea pigs. This film is stained and examined microscopically. Cowan and Maddocks (1935) found that tubercle bacilli when appearing in these films were usually associated with a particular kind of cell group. This point has been emphasised by Torrance (1927), Matthews (1931) and Davies (1933). They found it quicker easier and more efficient to examine the films for cell groups and then to examine these for tubercle bacilli.

I have attempted to increase still more the ease and efficiency of microscopic examination of milk films for tubercle bacilli. In all cases the films were examined under the low power objective ($\frac{1}{2}$ in) and if any cell groups were seen these were examined under the oil immersion objective to see whether they contained tubercle bacilli. The tuberculous cell groups are made up of pale-staining cells larger than other cells in milk and rather loosely piled up. The group may have a definite outline though this is not always true since other types of cells may overlie the large pale cells but the latter are the distinctive feature.

METHOD

Method of obtaining a deposit from milk for microscopic examination.—Milks known to contain tubercle bacilli were examined after varying treatments.

(a) Acid and alkali of various strengths were mixed with the sediment after the milk was centrifuged in an attempt to break up the deposits. It was found these did not make examination easier but rather destroyed cell groups.

(b) The milk was heated at about 60° C for about 20 minutes before centrifuging but this coagulated the cell groups and decreased the number of tubercle bacilli found.

(c) Milk was left in the ice-chest overnight and different layers spun—i.e. cream milk below cream and milk at the bottom of the bottle were spun separately. There was no regular difference in the number of tubercle bacilli in the different layers. This may have been due to mechanical difficulty of getting the layers definitely separated.

(d) Matthews (1931) reported the results of an examination of 500 samples of milk for the presence of tubercle bacilli. He spun the milk comparatively slowly for a short time and was very successful in finding the tubercle bacilli microscopically and the tubercle bacilli were associated with cell groups

such as Cowan and Maddocks found later. I therefore decided to use varying times and speeds for spinning milk known to contain tubercle bacilli and to compare the films from each. The times were 2, 5, 10 and 15 minutes at speeds of 1000, 2500 and 4000 r.p.m. I found that a film made from a deposit after spinning a milk for a short time at low speed was much easier to examine than a film from a deposit after a long rapid spin. The cell groups came down at the lower speeds and there was less other material in the films. As the deposits from different milks vary greatly in amount and consistence many samples had to be examined before deciding on the approximate time and rate of spinning to give the best average results when films were made from these deposits. This seemed to be between 2 and 5 minutes at 1000–2500 r.p.m.

Method of making films from deposits from milk.—Milk which was known to contain tubercle bacilli was centrifuged and films made from the deposit in various ways.

(a) The milk was poured off after centrifuging and the drops from the sides of the tube allowed to mix with the deposit before making the film.

(b) The milk was poured off and the centrifuge tube held inverted while films were made from the deposit allowing no milk to mix with it.

(c) A capillary pipette was used to transfer the deposit from the tube to the slide.

(d) A loop bent at a right angle was used to transfer the deposit from the tube to the slide.

(e) The deposit placed on the slide was spread with the loop.

(f) The deposit was spread on the slide with another glass slide as in making a blood film.

The films most easily and efficiently examined were those made by holding the tube with the deposit in it inverted while a loop bent at a right angle transferred the deposit to a slide (two loopfuls) this deposit then being spread with another slide. Clean new slides were used in every case.

Preparation of films for microscopical examination.—The films were allowed to dry in the air for at least half an hour and then fixed in a flame—not too hot. After cooling they were placed in alcohol and ether (equal parts) for 15 minutes and then washed with ether to get rid of the fat they were then stained in steaming carbol fuchsin for 8 min. washed in water decolorised in 3 per cent hydrochloric acid in alcohol for 3 min. washed in water decolorised in fresh acid alcohol for 3 min. washed in water counterstained with Löffler's methylene blue for 2 min. and washed well with water before drying in the air.

In staining large numbers of films simultaneously it has been found useful to put the slides into plastic slide holders and each solution into a large photographic tray with the exception of the carbol fuchsin which is put into a Staxite steel vessel to be heated over a gas ring. Each holder contains 10 slides and each tray will take 8 holders so that 80 films can be stained at one time. All the solutions can be poured back into bottles and used repeatedly.

These methods were developed by working with milk which was known to contain tubercle bacilli. I decided to try them with milk which came into the laboratory for routine examination.

Twenty-five samples of milk from single cows were spun for 3 min. at 1000 r.p.m. and also for 7 min. at 2500 r.p.m. as well as by the routine examination for 10 min. at 3500 r.p.m. The deposits after

This work has been supported and made possible by a grant from the Milk Marketing Board which is gratefully acknowledged.

spinning for 3 min at 2500 r p m gave better films on the whole than the slower spinning but the films from both these were definitely easier to examine than the films made after the routine method of spinning for 15 min at 3500 r p m. The slowest spinning was discontinued and 195 more samples of milk were examined using slow spinning and fast spinning. Of these samples 24 were found to contain tubercle bacilli by guinea-pig inoculation, 15 were found to contain tubercle bacilli by microscopic examination after slow spinning for a short time, 13 were found to contain tubercle bacilli by microscopic examination after fast spinning for a longer time.

It was thus evident that deposits from milk after spinning for 3 min at 2500 r p m were more easily examined and more frequently found to contain tubercle bacilli than deposits from milk after fast spinning for a longer time. The former was therefore adopted as a routine.

Quarter samples—Matthews (direct communication) always examined milk from each quarter separately of the udder of a cow. Thus there was no dilution of the milk containing the tubercle bacilli and so the chance of finding them microscopically was increased. I have been able to examine microscopically a very few samples of milk from each quarter of the udder as well as a mixed sample from the whole udder, but there was no doubt that the films from the "quarter samples" were more easily and quickly examined than those from a whole udder sample of the same cow.

Examination of films—In the foregoing description of a method for the microscopic examination of milk, stress has been put on "ease" as well as "efficiency," since, if the method was to be applied to routine examination of milk, which would involve a very great number of films, it was necessary to make the final examination by microscope as easy as possible. It takes slightly longer to spread a deposit with a glass slide than with a loop, but in the former case the cell groups tend to accumulate around the edges of the film so that under the microscope the edges can be examined first and, if there are no cell groups in this part, the slide does not need further attention, if they are there, they are found quickly and can be examined for tubercle bacilli.

Again, if the fat is not removed from the films before staining, much time is lost when examining the films under the microscope because there are many red stained particles which are fat and not tubercle bacilli and cause confusion.

With the fat removed and the films spread evenly so that the cell groups are more numerous at the edges, it is usually possible to examine 40 films in an hour without difficulty.

As stated above, the films are examined with a low power objective for the presence of tuberculous cell groups and only these cell groups are examined with the oil immersion lens for tubercle bacilli. The general description of these cell groups has been given but the best way of becoming familiar with them is by the study of films made from milk known to contain tubercle bacilli. When beginning to examine milk that may or may not contain tubercle bacilli, it would be of great advantage to inoculate guinea pigs with deposits from milk which show microscopically a grouping of cells about which the observer is dubious as to whether they constitute a true tuberculous cell group. By comparing the biological findings with the microscopic appearance confidence in differentiation is established. My own experience has been that, in examining quarter samples, when

tuberculous cell groups are present it is almost always possible to find tubercle bacilli in some of them.

ROUTINE MICROSCOPIC EXAMINATION OF QUARTER SAMPLES

First series—Having found a technique by which it was possible to make films from milk which could be easily and quickly examined microscopically I decided to try the efficiency of the method when used in a practical way. It was only by the keen coöperation of Mr Locke, chief veterinary officer of Manchester, that this series was possible.

When he received a report, after guinea pig inoculation, that milk from a farm supplying Manchester contained tubercle bacilli, he obtained quarter samples of milk from each cow on this farm when possible. Such samples have been examined from 36 farms, using the microscopic method described above. These are the results.

(a) On 11 farms no cow was found to give milk containing tubercle bacilli or cell groups indicating udder tuberculosis. These results have been confirmed by inoculation into guinea pigs in 6 cases. There was a history of the sale of a cow or cows from each farm since the taking of the original sample which gave a positive biological test for tubercle bacilli.

(b) From each of 2 farms milk from 1 cow was found to contain cell groups but no tubercle bacilli. It was possible to get repeat samples from one of these cows and in these tubercle bacilli were found as well as cell groups. No further sample could be obtained from the other cow but the local veterinary officer found tubercle bacilli in the milk by microscopic examination.

(c) From 21 farms 1 cow and from 2 farms 2 cows were found to give milk containing tubercle bacilli in films. These findings were confirmed by inoculation of the milk into a guinea pig or by post-mortem examination of the cow or by both methods. The cows giving milk in which tubercle bacilli were found by microscopic examination were removed from 18 of these farms, the milk from the cows remaining was found to have no tubercle bacilli as tested by guinea pig inoculation. The results of the test of the milk from 4 farms is not yet available and from 1 farm it was impossible to get a sample from the remaining cows.

Second series—Through the kind coöperation of Mr Amoss of Haslingden the milk from a second series of 26 farms was examined microscopically. In this series the milk had not been previously tested in any way.

Quarter samples were taken from each cow and examined as described above. From each of 2 farms 2 cows were found to give milk containing tubercle bacilli. In these 4 cases the milk was tested later by guinea pig inoculation and found to produce tuberculosis. Bulk samples from the remaining cows on each farm showed no tubercle bacilli when tested biologically.

Bulk samples of the milk from 16 of the other 24 farms were tested in guinea pigs and found to have no tubercle bacilli. The negative microscopic results from the milk of the other 8 farms were unfortunately not checked by guinea pig inoculation.

COMMENT

To sum up, quarter samples have been examined microscopically from approximately 950 cows and in 1 case only has the finding not been the same as the result from biological examination of the milk.

or post mortem examination of the cow. This was the case referred to above in which cell groups were found microscopically but no tubercle bacilli, although these were found by another examiner. No false positive results have so far been obtained.

Thus it would seem that the microscopic test for tubercle bacilli in milk, when it is done on quarter samples from individual cows, is very reliable. All films have been made from the milk within twelve hours after the samples were taken. This has only been possible by close cooperation between the field and laboratory workers and we do not know how successful the method would be if the milk were delayed in transit. Some samples of tuberculous milk have been kept in the ice chest for 24 hours and re-examined. The impression is that some cell groups disintegrate, but in no case has it been difficult to confirm the finding made on the fresh sample.

The value of a quick reliable method to diagnose tubercle bacilli in milk is obvious from the point of view of farmer veterinary inspector and consumer. A particularly careful clinical examination detected the infected cow in 86 per cent of cases on the 36 farms in the first series reported above. The average number detected by the usual clinical examination is probably lower and many cows with non tuberculous mastitis are mistakenly suspected. Therefore in at least 33 per cent. of farms visited for inspection the infected cow is missed, and after waiting six weeks for a report of a biological test the farm has to be visited again and more samples taken whereas it is possible to examine microscopically the milk from a whole herd in 48 hours.

REFERENCES

- Cowan R. T. and Macdocks L. (1935) *J. Path. Bact.* 41 373
 Davies G. O. (1931) *Rev. Med.* 18 1048
 Matthews H. T. (1931) *Ibid.* 11 403
 Torrance H. L. (1937) *Ibid.* 7 875

The Atmosphere of Halifax

THROUGHOUT 1935 monthly records of deposited atmospheric pollution were obtained at five stations in Halifax and the results are discussed in the annual report of Dr G. C. F. Roe the medical officer of health for the borough. At the Wade-street station in the centre of the town more than twice the quantity of insoluble solids was deposited than at West View Park 1½ miles to the west. There is not such an obvious difference in the amount of soluble solids. The influence of rain in bringing down soluble solids is well shown in diagrams as is the amount of daylight which the centre of the city loses by reason of its hazy atmosphere. In 1935 there was an increase in deposit of more than 25 per cent. over 1934. This is explained partly by the greater rainfall in the former year and partly by the better trade conditions resulting in more factory smoke. Dr Roe comments on the unskilful way in which the boilers of many factories are stoked and hopes that employers will not only allow but encourage their employees to attend the classes of instruction in stoking provided by the local education authority. As regards domestic smoke the increased use of gas electricity and solid smokeless fuels does not appear to have had much effect but this may have been overshadowed by the large number of new houses built during the year. Dr Roe emphasises that if full use is to be made of smokeless appliances adequate supplies of smokeless fuel must be available at reasonable cost and the public must get rid of what he regards as an obsession—that there is nothing like a coal fire.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. L. Moxon Browne to *Barham* as Fleet M.O. and as Specialist in Hygiene (on transfer of flag).
 Surg. Comdr. R. W. Higgins to *Warship* and R. W. Mowen to *Malaga* (on recomng.).
 Surg. Lt. Comdr. F. W. Gayford to *Malaga* (on recomng.).
 Lt. P. Spero to *Deronsire*. C. H. Egan to *Shropshire* and F. R. P. Williams to R. N. B. Chatham and R. M. Infirmary Deal.
 Surg. Lts. P. G. Stainton to *Enchantress*. M. G. Ross to *Pembroke* for R. M. Infirmary Deal and I. C. Macdonald to *Pembroke* for R. N. Hosp. Chatham.
 To be Surg. Lts. (D): F. B. Gamble and J. B. Knight.
 Surg. Lts. (D) G. P. Pearce to *Wildfire*. A. G. H. Hoberlein to *Deronsire*. W. L. Mountain to *Ramillies*. S. R. Wallis to *Victoria* for R. N. B. and D. N. Williamson to *Malaga*.

The following have been appointed Admiralty Surgeons and Agents: Mr R. A. M. Humphrey, Beer, East Devon; Mr G. Young of Rodars, at Contham; Mr F. Galloway of Vincent-square, S.W. 1 for London District No. 15 (Westminster, Victoria, &c.) and Mr J. A. Matheson, Lochgilphead, Argyll.

ROYAL NAVAL VOLUNTEER RESERVE

Surg. Comdr. R. Hall to *Ramillies*.
 Prob. Surg. Lt. L. F. Donnan to *Revenge*.
 Prob. Surg. Lt. J. K. Sargantson and Surg. Sub Lt. R. F. Hand to be Surg. Lts.

ROYAL ARMY MEDICAL CORPS

Capt. N. H. Lindsay retires on account of ill health receiving a gratuity.

TERRITORIAL ARMY

Capt. A. T. Ashcroft to be Maj.
 M. C. Oswald (late Off. Cadet Camb. Univ. Conigt. (Med. Unit) Sen. Div. O.T.C.) H. Mannington and G. B. Fbbage to be Lts.

Arrangements for the encampment of London District Territorial Army troops R.A.M.C. for annual training from August 1st-15th have been made as follows: 15th Gen. Hosp. at Shorncliffe; 16th Fd. Amb. 140th Fd. Amb. 8th Hygiene Coy. H.Q. and 12 Section at Currenden; 13 Section at Dilgate (prov.).

ROYAL AIR FORCE

Squadron Leader D. A. Wilson to Princess Mary's R.A.F. Hospital Halton for duty as Medical Officer.
 Flying Off. J. D. Milne to R.A.F. Station Warton Down.

Short Service Commissions as Flying Officers for three years on the active list: J. H. L. Newham (seconded for duty at the London Hospital) and P. A. Wilkins (seconded for duty at the Derbyshire Royal Infirmary).

INDIAN MEDICAL SERVICE

Capt. W. J. Shippey to be Maj.
 Lt. (on prob.) W. J. Young is retd. to the establishment.

DEATHS IN THE SERVICES

Colonel WILLIAM ALLAN MAY, C.B., late R.A.M.C. who died at Bath on May 18th in his 87th year was the son of Joseph May, R.R.C.S. Eng. of Devonport. He was educated at Tavistock Grammar School and qualified M.R.C.S. Eng. (1873) and L.R.S.A. Lond. (1874). In the latter year he entered the Army Medical Department becoming surg. major in 1896 and colonel in 1907. He retired in 1907. He served in South Africa (1900-4) as P.M.O., 8th Div. Field Force, was mentioned in dispatches, and created C.B. (Mil.). He was I.M.O. in Natal (1897-1902) in Egypt (1903-04) and for Tidewater district (1905-06). He served in the European war at home and was twice mentioned. He married in 1874 Cecilia Adele, daughter of the late Gen. G. A. A. N. Oshaffen, Colonial Commissioner, British Honduras.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM A MEDICAL ECONOMIST

V

THERE is an idea, often impressed upon young resident medical officers by their chiefs, that hospitals, in common with other institutions, possess a spirit. I used to believe this myself and even to imagine that I could feel the spirit of the hospital in which I served. But I am sure now that I was mistaken. The alleged spirit of the hospital was in fact the inspiration of my chief and his colleagues. I have lived long enough to see hospitals go down so that their lack of "spirit" was only too obvious and I have also seen hospitals restored by the exertions of able and single minded men.

They know all about this process in the public schools and, in consequence, exercise the greatest care in the choice of a head master. If they select the right man the school quickly becomes famous and attracts the sons of the most distinguished men of the time, but if a bad choice is made deterioration immediately occurs. There is nothing in bricks and mortar, in other words, to guarantee enthusiasm, nor is the memory of great service, unless it be supported by an active leadership, proof against human frailty.

The point is important in a world where the use of abstractions has assumed formidable shape. Schools, hospitals, towns, cities, countries—all, nowadays, are endowed with "spirits" and spoken of as if they were men and women. Books are written to investigate and analyse these modern monsters who, indeed, constitute a kind of Godhead.

The idea behind the fashion is, of course, that man in the mass differs from man the individual. This is accepted as axiomatic, is not mob psychology a fact of history? Men, according to Rousseau, become wholly different from their former selves when they are subjected to the influence of society and it is only necessary, therefore, to transform society in order to transform all its members. We have been working upon that idea for more than a century. The progress, in the best sense of that word, which was hoped for does not seem to have materialised.

The idea itself deserves scrutiny for it amounts to the assertion that an abstraction, society, is capable, over a longer or a shorter period, of effecting a kind of sexless regeneration. The individual plays no part, he is "influenced" just as the R.M.O. is supposed to be influenced by the hospital.

This remarkable process stands in the sharpest contrast to the kind of influences with which we are all familiar in our personal lives—for example, the coming of an enthusiasm or vocation, the birth of a deep friendship, or the love of woman or man. In these latter cases the person does experience a rebirth but the experience belongs exclusively to his or her own spirit and is, throughout, active and conscious.

Again "society" as Rousseau used the word is an elastic term. It may mean the State, the city, or the village. It may also mean the whole of humanity in reaction to the circumstances of nature. The constant reference to "the savage" in French Revolutionary writing conjures up a picture of man's ascent, by and through society, from the cave to the castle. Thus, on the one side, are ranged a whole world of dangers and threats of calamity and on the

other a "social organism" capable of effecting an unlimited number of transformations and transmutations, whereby danger is discounted and calamity overcome.

* * *

Students of English history are aware that the same idea underlay the philosophy of the Puritans. In that case, however, society meant the Presbyterian Body, association with which "uplifted" the unregenerate human creature to heights of spiritual strength. Nature was the enemy. So much so that Luther, who was by no means strict in his puritanism, denounced as a great heresy the idea that Nature might not be wholly vile. Nor was his opinion peculiar to himself or his age, the Stoics had said the same thing, though, again, in different language. These inheritors of Plato's philosophy, indeed, demanded, like their master, some ideal social structure by which men might be saved. From age to age philosophy concerned itself with the ascent not of man but of mankind. And the conclusion reached was always the same—namely, regeneration by abstraction, society, church, State, even war.

Nor has our own age failed to tread this hard beaten path. As was to be expected the ancient doctrine in its most modern form wears the complexion of science, but the features, nevertheless, are unmistakable. If for "society" we read "natural selection" we shall find ourselves immediately in familiar surroundings. Here, again, is the ascent of mankind, sexlessly, *en masse*, in the face of a hostile and unrelenting nature. As usual, all difficulties arising out of the character and behaviour of the individual man are swept aside. Man is vile and cannot ascend except by process of evolution.

What, in fact, does this doctrine of evolution teach? There are few things about life which are more fully substantiated than the rigidity of species. Whereas within the species almost any change can be effected by suitable mating, the species itself is a walled city. Evolution, therefore, in the sense in which Darwin and Huxley used that term can scarcely have come about as the result of mating in the ordinary acceptance. Evolutionists are apt to avoid this difficulty by retreat into geology—that is to say into Time. But the difficulty is not thus overcome. If the contention be merely that a given species has undergone morphological adaptation there is no ground of dispute, if, on the contrary, breeding across the type is suggested then more substantial evidence than geology can supply is necessary.

For what, in effect, is being said is that there are two kinds of reproduction, the ordinary kind and another in which masses and not individuals play the active part. These masses are the evolutionary vehicle and by their regenerative power the species is changed. It is true that, when Darwin wrote, the science of genetics had scarcely been born. But the doctrine of evolution is still preached like a gospel and forms, now, the basis of the thinking of millions of men and women.

These millions in consequence experience not the slightest difficulty in looking upon the abstraction society (that is to say non-ecstatic regeneration) as author and finisher and so in acknowledging their debt to it. All their ideas, even their religious ideas, are coloured by this attitude. Thus the teaching

that love alone can create and that the Creator himself is love has undergone subtle changes of emphasis. Above love it is insisted, stands justice to which love must needs make sacrifice. Justice is a social idea. Thus love is in debt to society individual creation to social creation. God the Father to God the Unknowable, that is to say to a mathematical point or to nothing at all.

This is a most convenient philosophy for the salesmen of debt and it is interesting therefore to note that it has been most actively taught and most widely believed in those periods when money lending was most rampant. The Greeks of the Athenian period were so bowed down by usury that great numbers of them had sunk into slavery. The Romans adopted the Stoic philosophy and Gibbon is of opinion that it was money lending debt which ruined and destroyed their civilisation. During the Age of Faith on the contrary money lending was forbidden every man in those centuries had his personal dignity as father and Christian. The Renaissance brought back classical learning—i.e. Greek and Roman philosophy—and soon Calvin, in Geneva, was giving his blessing to usury. Since then the march to ruin has been swift. To-day buttressed by evolution the money lender and his magic are enthroned in the heavens and upon the earth. Evolution society the State the common wealth—all these are pretty names for debt.

Social regeneration is monstrous untruth For

as has been said creation is by love by ecstasy and not otherwise. And this applies equally to all creation whether in the family in the arts or in the sciences. Again creation is by persons and occurs independently of any social structure. Social structures indeed exist by and through the creators' ecstasy—as witness the dissolution of beehives and termitaries if the queen is removed. There is no mass regeneration or reproduction and even the devices by which artificial insemination is brought about are vain if there be not what corresponds to an ecstasy of the reproductive cells. In other words as was said in a previous article the leader of his King thought creates the social organism just as the father of his love creates the family.

Unless these facts of experience are borne in mind abstract ideas are poison. The great central fact of life is the ecstasy of the individual being out of which creation proceeds. That ecstasy if it is real is always made flesh whether as offspring or as art music literature scientific discovery the doctor's office of healing or the craftsman's work. And always that process is attended by danger for the individual who nevertheless experiences great joy of it. Love in short is death and the resurrection from the dead it is the incarnation of spirit in flesh as well as the transmutation of flesh into spirit. This and this only is the ascent of man which ascent every man must make for himself by and through agencies which in time past very wise men did not hesitate to call supernatural and divine.

PANEL AND CONTRACT PRACTICE

A SOUTH AFRICAN HEALTH INSURANCE SCHEME

THE report of the Departmental Committee appointed by the South African Government to consider the introduction of national health insurance into the Union of South Africa has now been published and almost the whole of it is reprinted in the issue of the *South African Medical Journal* for April 24th.

The question has long been under consideration in the Union. As early as 1926 the South African committee of the British Medical Association passed resolutions in favour of establishing in the Union a scheme of insurance against sickness and invalidity to include all races and the dependents of the insured resting on a compulsory and contributory basis and starting in urban areas. The resolutions have been repeatedly reaffirmed and were included in the evidence submitted to the Departmental Committee by the Medical Association of South Africa (B.M.A.). The recommendations of the Association including those relating to the capitation fee were in substance accepted by the Committee and the report may therefore be taken as expressing not only the results of a thorough official investigation but also the views of the representative body of the South African medical profession. The two medical members of the Committee, though they have signed the report with their colleagues have each submitted a minority report dissenting from some of the Committee's conclusions relating to the provision of medical services in rural areas but the *South African Medical Journal* the official organ of the Medical Association of South Africa (B.M.A.) states emphatically that though the signatures of the minority reports were nominated by the Association their reports must not be taken as representing the views of the medical profession in South Africa or of any branch or division of our Association.

The report is a valuable and workmanlike document. The Committee made a careful study of what has been written on the subject they were at pains to ascertain the views of interests likely to be affected by a national health insurance scheme they visited many areas and they had early in their inquiries, the advantage of conferring with Sir Walter Kinnear who was on a holiday visit in the Union.

The Committee, like all other bodies that have attempted to draw up health insurance schemes in the Dominions, were impressed by the difficulties of providing health insurance in outlying rural areas. In South Africa the difficulties are especially formidable because of the relative scarcity of doctors. In 1931 the population of all races in the Union was 8 172 600 and the number of practising doctors was 1533 or 5305 persons per doctor as compared with 800 in Australia and 1500 in England. The Committee conclude that the time is not yet ripe for the initiation of a scheme of health insurance for our rural areas.

A SCHEME FOR THE URBAN AREA

A scheme however is formulated and recommended for applying health insurance on a compulsory and contributory basis to all employees both manual and non manual workers earning not more than £400 per annum and employed within the areas of urban local authorities and such other areas as the Government may from time to time proclaim. In the Committee's opinion the world bring within the scope of the scheme all workers resident within a radius of three miles from an insurance practitioner or surgeon. It is estimated that the number of such employees is 842 683. The insured person would be placed in eight wage groups the lowest wage being up to £36 per annum and the highest from £370 to £1000 and within each wage group the contribution and the cash benefits would be uniform. The weekly contributions payable by the

33325

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month, his name can be seen later in the half-yearly index

FROM A MEDICAL ECONOMIST

V

THERE is an idea, often impressed upon young resident medical officers by their chiefs, that hospitals, in common with other institutions, possess a spirit. I used to believe this myself and even to imagine that I could feel the spirit of the hospital in which I served. But I am sure now that I was mistaken. The alleged spirit of the hospital was in fact the inspiration of my chief and his colleagues. I have lived long enough to see hospitals go down so that their lack of "spirit" was only too obvious and I have also seen hospitals restored by the exertions of able and single minded men.

They know all about this process in the public schools and, in consequence, exercise the greatest care in the choice of a head master. If they select the right man the school quickly becomes famous and attracts the sons of the most distinguished men of the time, but if a bad choice is made deterioration immediately occurs. There is nothing in bricks and mortar, in other words, to guarantee enthusiasm, nor is the memory of great service, unless it be supported by an active leadership, proof against human frailty.

The point is important in a world where the use of abstractions has assumed formidable shape. Schools, hospitals, towns, cities, countries—all, nowadays, are endowed with "spirits" and spoken of as if they were men and women. Books are written to investigate and analyse these modern monsters who, indeed, constitute a kind of Godhead.

The idea behind the fashion is, of course, that man in the mass differs from man the individual. This is accepted as axiomatic, is not mob psychology a fact of history? Men, according to Rousseau, become wholly different from their former selves when they are subjected to the influence of society and it is only necessary, therefore, to transform society in order to transform all its members. We have been working upon that idea for more than a century. The progress, in the best sense of that word, which was hoped for does not seem to have materialised.

The idea itself deserves scrutiny for it amounts to the assertion that an abstraction, society, is capable, over a longer or a shorter period, of effecting a kind of sexless regeneration. The individual plays no part, he is "influenced" just as the R.M.O. is supposed to be influenced by the hospital.

This remarkable process stands in the sharpest contrast to the kind of influences with which we are all familiar in our personal lives—for example, the coming of an enthusiasm or vocation, the birth of a deep friendship, or the love of woman or man. In these latter cases the person does experience a rebirth but the experience belongs exclusively to his or her own spirit and is, throughout, active and conscious.

Again "society" as Rousseau used the word is an elastic term. It may mean the State, the city, or the village. It may also mean the whole of humanity in reaction to the circumstances of nature. The constant reference to "the savage" in French Revolutionary writing conjures up a picture of man's ascent, by and through society, from the cave to the castle. Thus, on the one side, are ranged a whole world of dangers and threats of calamity and on the

other a "social organism" capable of effecting an unlimited number of transformations and transmutations, whereby danger is discounted and calamity overcome.

* * *

Students of English history are aware that the same idea underlay the philosophy of the Puritans. In that case, however, society meant the Presbyterian Body, association with which "uplifted" the unregenerate human creature to heights of spiritual strength. Nature was the enemy. So much so that Luther, who was by no means strict in his puritanism, denounced as a great heresy the idea that Nature might not be wholly vile. Nor was his opinion peculiar to himself or his age, the Stoics had said the same thing, though, again, in different language. These inheritors of Plato's philosophy, indeed, demanded, like their master, some ideal social structure by which men might be saved. From age to age philosophy concerned itself with the ascent not of man but of mankind. And the conclusion reached was always the same—namely, regeneration by abstraction, society, church, State, even war.

Nor has our own age failed to tread this hard beaten path. As was to be expected the ancient doctrine in its most modern form wears the complexion of science, but the features, nevertheless, are unmistakable. If for "society" we read "natural selection" we shall find ourselves immediately in familiar surroundings. Here, again, is the ascent of mankind sexlessly, *en masse*, in the face of a hostile and unrelenting nature. As usual, all difficulties arising out of the character and behaviour of the individual man are swept aside. Man is vile and cannot ascend except by process of evolution.

What, in fact, does this doctrine of evolution teach? There are few things about life which are more fully substantiated than the rigidity of species. Whereas within the species almost any change can be effected by suitable mating, the species itself is a walled city. Evolution, therefore, in the sense in which Darwin and Huxley used that term can scarcely have come about as the result of mating in the ordinary acceptance. Evolutionists are apt to avoid this difficulty by retreat into geology—that is to say into Time. But the difficulty is not thus overcome. If the contention be merely that a given species has undergone morphological adaptation there is no ground of dispute, if, on the contrary, breeding across the type is suggested then more substantial evidence than geology can supply is necessary.

For what, in effect, is being said is that there are two kinds of reproduction, the ordinary kind and another in which masses and not individuals play the active part. These masses are the evolutionary vehicle and by their regenerative power the species is changed. It is true that, when Darwin wrote, the science of genetics had scarcely been born. But the doctrine of evolution is still preached like a gospel and forms, now, the basis of the thinking of millions of men and women.

These millions in consequence experience not the slightest difficulty in looking upon the abstraction society (that is to say non-ecstatic regeneration) as author and finisher and so in acknowledging their debt to it. All their ideas, even their religious ideas, are coloured by this attitude. Thus the teaching

that love alone can create and that the Creator himself is love has undergone subtle changes of emphasis. Above love, it is insisted stands justice to which love must needs make sacrifice. Justice is a social idea. Thus love is in debt to society individual creation to social creation. God the Father to God the Unknowable that is to say to a "mathematical point or to nothing at all.

This is a most convenient philosophy for the salesmen of debt and it is interesting therefore to note that it has been most actively taught and most widely believed in those periods when money lending was most rampant. The Greeks of the Athenian period were so bowed down by usury that great numbers of them had sunk into slavery. The Romans adopted the Stoic philosophy and Gibbon is of opinion that it was money lending debt which ruined and destroyed their civilization. During the "Age of Faith" on the contrary money lending was forbidden every man in those centuries had his personal dignity as father and Christian. The Renaissance brought back classical learning—i.e. Greek and Roman philosophy—and soon Calvin in Geneva, was giving his blessing to usury. Since then the march to ruin has been swift. To day buttressed by evolution the money lender and his magic are enthroned in the heavens and upon the earth. Evolution society the State the common wealth—all these are pretty names for debt.

Social regeneration is monstrous untruth. For

as has been said creation is by love, by ecstasy and not otherwise. And this applies equally to all creation whether in the family in the arts, or in the sciences. Again creation is by persons and occurs independently of any social structure. Social structures indeed, exist by and through the creator's ecstasy—as witness the dissolution of beehives and territories if the queen is removed. There is no mass regeneration or reproduction and even the devices by which artificial insemination is brought about are vain if there be not what corresponds to an ecstasy of the reproductive cells. In other words, as was said in a previous article the leader of his King thought, creates the social organism just as the father of his love creates the family.

Unless these facts of experience are borne in mind abstract ideas are poison. The great central fact of life is the ecstasy of the individual being out of which creation proceeds. That ecstasy if it is real is always made flesh whether as offspring or as art music, literature, scientific discovery the doctor's office of healing or the craftsman's work. And always that process is attended by danger for the individual who nevertheless experiences great joy of it. Love, in short is death and the resurrection from the dead, it is the incarnation of spirit in flesh as well as the transmutation of flesh into spirit. This and this only is the ascent of man which ascent every man must make for himself by and through agencies which in time past very wise men did not hesitate to call supernatural and divine.

PANEL AND CONTRACT PRACTICE

A SOUTH AFRICAN HEALTH INSURANCE SCHEME

THE report of the Departmental Committee appointed by the South African Government to consider the introduction of national health insurance into the Union of South Africa has now been published and almost the whole of it is reprinted in the issue of the *South African Medical Journal* for April 24th.

The question has long been under consideration in the Union. As early as 1928 the South Africa committee of the British Medical Association passed resolutions in favour of establishing in the Union a scheme of insurance against sickness and invalidity to include all races and the dependents of the insured resting on a compulsory and contributory basis and starting in urban areas. The resolutions have been repeatedly reaffirmed and were included in the evidence submitted to the Departmental Committee by the Medical Association of South Africa (B.M.A.). The recommendations of the Association including those relating to the capitation fee were in substance accepted by the Committee and the report may therefore be taken as expressing not only the results of a thorough official investigation but also the views of the representative body of the South African medical profession. The two medical members of the Committee though they have signed the report with their colleagues have each submitted a minority report dissenting from some of the Committee's conclusions relating to the provision of medical services in rural areas but the *South African Medical Journal* the official organ of the Medical Association of South Africa (B.M.A.) states emphatically that though the signatures of the minority reports were nominated by the Association their reports must not be taken as representing the views of the medical profession in South Africa or of any branch or division of our Association.

The report is a valuable and workmanlike document. The Committee made a careful study of what has been written on the subject they were at pains to ascertain the views of interests likely to be affected by a national health insurance scheme they visited many areas and they had, early in their inquiries the advantage of conferring with Sir Walter Kinnear who was on a holiday visit in the Union.

The Committee, like all other bodies that have attempted to draw up health insurance schemes in the Dominions were impressed by the difficulties of providing health insurance in outlying rural areas. In South Africa the difficulties are especially formidable because of the relative scarcity of doctors. In 1931 the population of all races in the Union was 8 132 600 and the number of practising doctors was 1533 or 5305 persons per doctor as compared with 800 in Australia and 1500 in England. The Committee conclude that the time is not yet ripe for the initiation of a scheme of health insurance for our rural areas.

A SCHEME FOR THE URBAN AREAS

A scheme however is formulated and recommended for applying health insurance on a compulsory and contributory basis to all employees both manual and non manual workers earning not more than £400 per annum and employed within the areas of urban local authorities and such other areas as the Government may from time to time proclaim. In the Committee's opinion this would bring within the scope of the scheme all workers resident within a radius of three miles from an insurance practitioner's surgery. It is estimated that the number of such employees is 882 083. The insured persons would be placed in eight wage groups the lowest wage being up to £36 per annum and the highest from £370 to £400 and within each wage group the contributions and the cash benefits would be uniform. The weekly contributions payable by the

23325

Government, the employer, and the insured are as follows —

Wage-group	Weekly contribution					
	Total		Of which payable by—			
			Government.		Employer	Insured
	s	d	s	d	s	d
(a)	1	0	0	3	0	9
(b)	1	5	0	6	0	9
(c)	1	10	0	6	1	0
(d)	2	5	0	6	1	2
(e)	3	0	0	4	1	5
(f)	3	10	0	4	1	9
(g)	4	8	0	4	2	2
(h)	5	6	0	4	2	7

It is estimated that at the beginning of the scheme the annual contributions will amount to a total of £5,331,601, to which the employers will contribute 49.95 per cent, the insured 35.48 per cent, and the Government 14.57 per cent. Expenses of administration are estimated to amount to 10 per cent of the total contributions. The contributions of employers and employees would be collected, as in Great Britain, by means of insurance stamps affixed weekly by the employer on the insurance card of each employee.

The scheme would be administered by a central board of management consisting of an equal number of representatives of the Government, the employees, and the employers, one of the Government's representatives being a doctor, and locally by district boards consisting of representatives of the Government, employees, and employers, and of the medical profession, one of the latter being chosen by the local medical committee, to be set up in the area of each district board. Local medical committees would deal with such matters as the range of insurance medical services, the control of unnecessary prescribing and lax certification, and disputes between insurance practitioners. Disputes between practitioners and insured persons would be dealt with by a subcommittee of the district board consisting of an equal number of representatives of the board, and of persons appointed by the local medical committee, with a neutral chairman.

BENEFITS

The scheme would provide cash benefits and medical and ancillary services. The most important of the former is sickness benefit, which is the payment of weekly sums to insured persons rendered incapable of work by sickness. The sums stated vary with the wage groups of the insured persons. In the lowest group the sum stated is 4s, in the highest it is 32s. The insured person would receive also an additional payment for a dependent wife, or husband, and for each child, up to four, below 16 years of age. The additional sums also vary with the wage group in which the insured person is placed. Sickness benefit would be paid at these rates for 26 weeks, and at half rates for 52 subsequent weeks of sickness.

In providing cash allowances for dependents the scheme follows the precedent of unemployment insurance, but not health insurance, in this country. The Committee think that the difficulties of administering sickness benefit, especially those relating to certification, appear to be serious in all countries, and are likely to be exceptionally serious in South Africa, and they therefore submit an alternative scheme in which no provision for sickness benefit is made.

The scheme provides a maternity benefit, consisting

of (a) a lump sum payable on the confinement of the uninsured wife of an insured man or of an insured woman, and (b) in the case of an insured woman, weekly payments during the four weeks following confinement. The lump sum varies according to the wage group from £2 to £9, and the weekly payments from 4s to 32s, together with a supplementary allowance for an incapacitated husband and for each dependent child under 16.

Unlike most national insurance schemes, this scheme provides a funeral benefit, which is a lump sum payable on the death of an insured man, or the dependent wife of an insured man, or of the dependent child of an insured person. The amount varies according to age group from £4 to £11 for a man or a woman, and from £2 to £5 10s for a child.

MEDICAL BENEFIT

The most important, and most costly, benefit is medical benefit, which is described under three categories: ordinary, specialist, and hospital. Ordinary medical benefit includes (1) general practitioner services, excluding attendance on a confinement, and for an illness directly arising therefrom during the subsequent four weeks, and (2) the supply of drugs and of such appliances as may be included in a list to be prescribed by regulation. Specialist medical benefit includes all other medical and surgical treatment, the division between the two categories to be in accordance with regulations made after consultation with the medical profession. Hospital medical benefit consists of the payment of 9s per day for not more than thirteen weeks in a case in which a person is admitted, on his doctor's request, to a hospital or approved nursing home, or, where such accommodation cannot be obtained, is receiving full time attendance at home from a nurse. The dependents of the insured as well as the insured themselves are entitled to medical benefit.

The Committee recommend that the capitation fee should be that put forward by the Medical Association, which, however, they say is somewhat higher than they contemplated. It is 9s for persons with an income below £180 per annum, and 13s for those with incomes between £180 and £400. They also recommend, in agreement with the Association, that a sum equal to 25 per cent of the total value of the capitation fees should be provided to form a pool for the remuneration, on an attendance basis, of the specialists, and that the administration of this pool should be vested in the medical profession. It is contemplated that a contract will be entered into between the insurance authorities and the Medical Association for the provision of the general practitioner service, which will be open to all practitioners who desire to participate in the scheme, and that the insured persons will be free to choose their doctors from among such practitioners. The specialist services will be provided by a contract between the same parties on somewhat similar lines.

It is estimated that the costs of the benefits in the early stages of the scheme will be as follows —

Medical—	£
Ordinary	1 599 412
Specialist	247 022
Hospital	675 993
Maternity	369 276
Funeral	161 407
Sickness	1 338 309
Total	£4 612 321

The scheme follows that of Great Britain in many important respects—in particular the right of all doctors to take part in insurance practice, free choice

of doctor the capitation method of remunerating general practitioners and the assumption by the medical profession of important administrative functions. In the extended range of medical services provided and in the division of the insured population into wage groups with different rates of contribution and of cash benefits it is more in line with the German system. For the varying of the capitation fee according to the income of the patient there appears to be no precedent in national health insurance administration. It seems likely to give rise to considerable administrative difficulties, and the same may be said of the division of the insured population into eight wage-groups.

Though the Departmental Committee do not feel

justified in recommending any form of insurance scheme for the rural areas or the native areas they make certain proposals for improving the medical and nursing services of those areas. The measures proposed do not however appear to be precisely defined or adequate to deal with the difficulties described and seem in some degree open to the objections expressed in the minority reports of the medical members. But this is a subject on which no one unacquainted with the local conditions could venture to form a confident opinion.

The report of the Committee is being widely circulated and will doubtless be much discussed and it is not unlikely that their recommendations will be materially modified before they reach the Legislature.

SPECIAL ARTICLES

FOUR THOUSAND BASQUE CHILDREN

By RICHARD W B ELLIS M.D. M.R.C.P.

ASSISTANT PHYSICIAN FOR CHILDREN'S DISEASES, GUY'S HOSPITAL
LONDON AND

AUDREY E RUSSELL M.B.

ASSISTANT IN THE CHILD WELFARE DEPARTMENT UNIVERSITY
COLLEGE HOSPITAL, LONDON

THE shipment of children from Bilbao who arrived at Southampton on Saturday is a grim reminder of the magnitude of the refugee problem created by modern warfare. When it is realised that the ship could have been filled many times over with children whose parents would prefer to be separated from them for an indefinite time rather than let them face existing and imminent conditions in Bilbao that very many more have already been evacuated to France; and that the population of Bilbao is still nearly double its normal figure, some idea may be gained of the work of evacuation which still remains to be done. As the arrival of this group of children has already aroused interest and sympathy in this country we feel that a few particulars of existing conditions in the Basque capital and of our impressions gained of both parents and children during the medical examinations carried out there may be enlightening.

THE SITUATION IN BILBAO

On visiting the *Asistencia Social* (the ministry directly concerned with the refugee problem) and the institutions for orphans and the aged under its control it became obvious that the Basque Government is making magnificent efforts to deal with difficulties becoming daily more impossible. Most of the public services are still operating though the schools have had to be closed owing to the incessant air raids the women and children spending most of the day on the steps of the refugios (or bomb shelters) ready to take cover when the sirens give the alarm. Fortunately the many attempts to bomb the waterworks have as yet been unsuccessful so that a good water supply is still available and no severe epidemics have broken out.

The strictest rationing is in force and though a few food ships have run the blockade there is only ten days' food in hand for the city. For many weeks the people have been living on beans, rice, cabbage and 35 grammes a day of black bread. Owing to the evacuation of the surrounding farms and villages eggs, meat, milk and butter are almost unobtainable. There are small supplies of oranges and olive oil but only a minimal amount of fresh vegetables. There is

no coal, and owing to the air raids, little opportunity for cooking. In many cases it is obvious that the women have starved themselves to provide for the children. One pregnant mother who brought up five healthy looking children for examination was herself so weak she could hardly stand and said smiling that perhaps she would find time to eat when her children were safe in England. Some idea of the state of general disruption caused by the continual aerial bombardment of the town may be gained from the conditions under which the medical examinations had to be carried out. The group of children selected for the Expedition to Inglaterra had been numbered and the first five hundred numbers notified by an announcement in the papers to attend the *Asistencia Social* at 8 A.M. The examinations had hardly begun when the sirens sounded the alarm and the children scattered to the nearest refugio. The air raid lasted 40 minutes. This happened four times during the morning by which time only about sixty children had been seen and the rest had all dispersed. Next day it was impossible to get any to attend for it was Coronation Day and manifestos had been dropped from the air saying that that day would be chosen to bombard Bilbao from air land and sea. The following day it was decided to work in a garden containing a refugio (which served as a convenient dressing room) but even then interruptions were so frequent it became clear that most of the work must be done at night if it was ever to be completed. And so a continuous queue filed by each night until 2 A.M. without the slightest complaint children often attending alone or with an older child and not infrequently unable to get home that night. We cannot speak too warmly of the courage and co-operation both of the children and of their parents. Those who have examined many throats will realise what this implies: not a dozen children out of the whole four thousand cried during the examination and only four had to be held!

RESULTS OF MEDICAL EXAMINATION

The group is not strictly speaking exclusively Basque in origin though the majority are of an obviously different physical type from the southern Spaniards. Many have light brown or even red hair a few are blue-eyed and very few could be described as swarthy. Their facial colouring would usually pass for that of a sunburnt English child. Perhaps the most surprising feature of the examination was the good health of the group as a whole in spite of the conditions of deprivation, anxiety and overcrowding in which they had been living for many weeks. It was evident that even the poorer peasants have a

high standard of care for their children, and that before the blockade almost all the latter were well developed and well fed. It was impossible to weigh and measure the whole group at this time or to apply any strict standards of nutrition, but the impression was definitely gained that although the majority showed loss of subcutaneous fat, the period of malnutrition had not been long enough to cause permanent damage or muscular weakness, and that recovery under proper conditions should be rapid and complete. A few of the smaller children, however, showed really severe marasmus, and were immediately recognisable, even before being stripped, by their blank apathetic faces, their slow movements and whispering speech, and their distended abdomens.

No gross evidence of vitamin deficiency was found with the exception of hyperkeratinisation around the hair follicles, which was relatively common, giving the skin a peculiarly rough feel. It was unfortunately impossible to test for night blindness. The very high incidence of dental caries, however, is probably attributable at least in part to the deficient diet.

Amongst 4090 children examined, the following conditions were noted (furunculosis, impetigo, and pediculæ not being included):

Rheumatic carditis	9	Scabies	13
Old anterior poliomyelitis	5	Ringworm	1
Pott's disease	3	Mumps	2
Otorrhœa	17	Diphtheria	1
Cervical adenitis	17	Bronchitis	4
Hutchinson's teeth	4	Pulmonary fibrosis	1
Clutton's joints and interstitial keratitis	1	Trachoma	2

The two cases of trachoma (occurring in brothers who had come from Valencia) were of course excluded from those allowed to embark, as were the families of those with mumps and diphtheria.

There were also the following congenital abnormalities—

Congenital morbus cordis	2	Congenital dislocation of hip	1
Dextrocardia	1	Congenital absence of pectoralis major	1
Hemiatrophy of face	1		
Inclusion dermoid	1		

Two interesting features of the findings, if compared with any corresponding figures for English school children in the same age group (5 to 15), are (a) the extreme rarity of respiratory infection, and (b) the *entire absence of chorea*. On the face of it, Bilbao would provide sufficient terror, anxiety, and overcrowding to produce chorea in any normal child if these were the only factors necessary, and one is forced to the conclusion that they are not. Amongst a group of 200 young schoolmistresses and nannies, however, examined at the same time, 2 had to be excluded because of early Graves's disease.

Another revealing feature of the group was the appearance of the children's throats. Less than 2 per cent had had tonsillectomies performed, and in a very great number of cases the tonsils were as large or larger than walnuts. But the incidence of both cervical adenitis and otorrhœa was only approximately 0.4 per cent, and that of obvious respiratory infection almost incredibly low. The same is true of nasal discharges and respiratory obstruction. The important question arises as to what will happen to these children now they have reached England. Owing to the difficulty of obtaining parents' consent to operation, it is devoutly to be hoped that they will retain their tonsils, since it might well prove disastrous if these were to be removed before the children had had opportunity of acquiring general immunity to catarrhal infections. (It is also perhaps of interest that of the 200 adults examined none showed appreciably enlarged or unhealthy tonsils.)

THE CHILDREN IN ENGLAND

Having been passed by the port medical authority, the children are at present lodged in camp at Loughborough. It is intended that they shall be drafted from here to homes throughout the country, being kept as far as possible in groups with their appropriate school teachers. Funds are urgently needed for this work, which is being carried out by the National Joint Committee for Spanish Relief in association with the Catholic, Salvation Army, and other organisations. It was impossible not to be touched by the absolute faith the parents had in handing over their children to the care of England. It will surely be the desire of everyone to see that their faith is justified, and that those children who have parents still living return to them under happier circumstances safe and well.

GENERAL MEDICAL COUNCIL

PRESIDENT'S ADDRESS

OPENING the 145th session of the Council on Tuesday last, Sir NORMAN WALKER spoke of the death of two former members, Prof. Theodore Cash and Sir Grafton Elliot Smith, and of Sir William Hansell who served as legal assessor from 1920 to 1927. Sir Henry Dale had unfortunately been unable to accept reappointment as a Crown nominee, and Sir Norman expressed the Council's gratitude to him for successfully guiding their early steps in their close and cordial collaboration with the British Pharmacopœia Commission.

"It is enjoined by tradition," continued the President, "that the summer session shall be primarily devoted to the first object of the Council's existence, medical education, and that they shall deal with disciplinary cases, as a Council of Medical Registration, mainly at the session in November. But in recent years, at any rate, it has seldom been possible to achieve this aim, because the penal cases committee are not in a position to regulate the numbers of cases of convictions of registered medical practitioners reported, or of complaints made, to the Council, which in their judgment call for the holding of inquiries before the Council at the next ensuing session. On this occasion, fortunately, circumstances seem more favourable than they sometimes are, and though a substantial number of disciplinary cases awaits your consideration, none appears likely to be exceptionally lengthy, and time should be available within the week for ample discussion of the reports of the three committees whose work lies in the sphere of medical education."

"The report which will call for the fullest consideration is that of the education committee, who have been dealing with the concluding stages of the revision of the curriculum initiated in 1934. There has been a little variation in method, though not in principle, in the procedure adopted on this occasion. Instead of leaving the matter to the education committee, as was usually done in the comparatively recent past, the executive committee recommended to the Council the appointment of a special curriculum committee composed of the chairmen of the three standing committees on education, examination, and public health, who were individually recognised as authorities on physiology, anatomy, and public health, with the addition of a physician, a surgeon, an obstetrician, and a member engaged in the general practice of medicine. The Council adopted the recommendation

on June 2nd, 1934. The committee elected Dr Tidy as their chairman and commenced work at once reporting progress to the Council in November 1934 and making interim reports in May and November 1935. Constant communication with the licensing bodies was maintained and most of the deans manifested their interest in and their criticism of some of the proposals made. As time went on and all who are familiar with the working of the Council know that in reform of the medical curriculum it is wisest to hasten gently the true meaning of a reform of the curriculum was more and more understood.

This Council is a team composed in the first instance of a representative from each of the licensing bodies. To these are added five nominees by the Crown and seven practitioners elected by the direct vote of the profession in each of the three divisions of the United Kingdom. To the Council is committed a general supervision of medical education and in their early days perhaps the licensing bodies were the only persons actively interested. Admission to the Register was easy in 1858 but in process of time by general agreement among the bodies the minimum curriculum was fixed at three winter and two summer seasons. Then came four years and in 1890 the Council unanimously approved an extension to five years afterwards modified to 57 months mainly because university years were usually of nine months.

On no previous occasion have the proposals of the Council been more thoroughly hammered out on the anvil of discussion and a large measure of agreement has apparently been reached. Thus with certain reservations there seems to be approval of the age of 18 for registration of students.

The question of biology chemistry and physics has always been a problem and I remind the Council that it was only in 1893 that the Council ordained that the first and last of these subjects must be contained in the medical curriculum. Chemistry was defined then as including the principles of the science, and the details which bear on the study of medicine. In 1893 in most parts of the country the teaching of chemistry and physics in schools was of an elementary character and biology only appeared in the curriculum of one or two of them. Times have changed and the chemistry and physics taught in the majority of the schools is of high standard even if it does not include any details which bear on the study of medicine. These must, of course, be learned in medical schools. The teaching of biology of a sufficient standard has not advanced so far as that of the other two subjects. Schools capable of undertaking it are not uniformly scattered over the British Isles and there is a feeling in some quarters that the minds of some young people are perhaps too much devoted to the study of those three subjects to the detriment of their general education.

Here we are helped by the elasticity of our system. If we agree, in order to furnish the requisite knowledge and skill for the efficient practice of the profession that the medical curriculum proper requires to be extended to five years the licensing bodies (all represented here) will frame their regulations accordingly. Already Birmingham Bristol Liverpool Manchester Oxford Wales and University College Galway require six years. Cambridge Leeds, London and Sheffield five and a half and it is common knowledge that others have in contemplation an extension of their curricula. This is the way in which medical education in this country progresses. The Council prescribes a minimum below which no body which wishes to retain its right of admission to the Register may drop but has nothing but a

well done for those bodies which raise the standards for admission to their own degrees.

A vote of thanks to the President for his address was proposed by Mr E W Hey Groves seconded by Dr T G Moorhead and carried unanimously.

Mr Harold Collinson F.R.C.S. representative of the University of Leeds for three years from August 1st 1936 was introduced by Mr R E Kelly.

The Council then passed to the consideration of penal cases.

IRELAND

(FROM OUR OWN CORRESPONDENT)

A SEQUEL TO INOCULATIONS

A DEATH following immunising injections against diphtheria has lately been investigated at an inquest held at Ring Co Waterford. From the evidence given it appears that there is no conflict about the facts. A child of 12 years of age was treated with injections of T.A.F. on Nov 9th 17th and 24th, 1936. She complained of a sore arm early in January 1937 and Dr D T McCarthy of Dungarvan who had given the injections saw her. According to his evidence he found a small discharging ulcer on the site of the inoculation. The axillary glands were enlarged and tender. Her condition deteriorated and the child died on April 20th. An autopsy by Dr W J O'Donovan lecturer in clinical pathology at University College Cork, showed generalised tuberculous infection without meningitis. According to Dr O'Donovan the inflammation on the right arm could not be recognised as tuberculous. Dr McCarthy stated that he had got the material used from Dr O Farrell county medical officer of health. He had inoculated 44 children at St Augustine's College on Nov 3rd 10th and 18th 1936 and no illness resulted. He inoculated 38 children at Ring College on the dates given above and 24 of them were affected. He believed that these 24 were injected in sequence. He gave in detail the precautions which he took for sterilising the instruments with which he carried out the injections, and stated that he had the attendance of a nurse on each occasion. He had no case of tuberculosis in his general practice or in the district hospital at the time. The child, when ill, had been seen in consultation by Dr Casey of Dungarvan and Dr P Kiely of Cork and bacteriological examinations had been made by Dr O'Donovan. He notified the deputy coroner of the child's death. The child's father stated that he had given his consent to the inoculation that he knew that two of Dr McCarthy's children had been inoculated at the same time, that three of his other children had also been inoculated and that they had sore arms. Dr H J Parish bacteriologist to Messrs Burroughs Wellcome and Co who attended the inquest, gave detailed evidence as to the manufacture of T.A.F. and went minutely into the different processes. He contended that their system was error proof. Prof. J W Bigger of Dublin also described Messrs Burroughs Wellcome and Co's laboratories at Beckenham. He was of the opinion that the precautions taken in the manufacture of T.A.F. made it impossible for a live culture of tuberculosis to contaminate the product. The inquest was held by Dr C J Walsh coroner for East Waterford since Dr McCarthy himself was coroner for West Waterford and his deputy was also debarred as he was acting as legal adviser to Dr McCarthy. At the conclusion of the hearing on May 21st Dr Walsh adjourned the inquiry sine die for advice as to his jurisdiction.

AN INDIAN LEPROSY HOSPITAL

(FROM A CORRESPONDENT)

ALTHOUGH in one of the healthiest parts of India, at Coonoor, which is situated in the Nilgiris at a height of 6000 ft. over sea level, one may see on the outer wall of a chemist's shop a large and reassuring announcement to the effect that it sells "the household remedy for all aches and pains," there are other parts of India that have cause to be less happy.

In the largest of the native states, Hyderabad, there is a good deal of leprosy and much is being done under Colonel Norman Walker, director of the Nizam's medical service, to combat this affliction. The annual report of the well-known leprosy hospital at Dichpali makes very interesting reading. In the year ending November, 1936, 903 new patients were admitted, compared with 764 the previous year, while 557 patients passed out of the institution, for lack of space, however, 1209 applications for admission had to be refused. Sir Leonard Rogers wrote in 1933 that "some two thirds of the lepers in the asylums of India are uninfected nerve cases whose isolation does nothing to reduce infections. Yet the public, in their ignorance, still evince the greatest dread of the perfectly harmless crippled lepers with loss of fingers and toes, although they are mostly suffering from the scars of an old 'burnt out' infection." It is because the verdict of scientific opinion is quite clear that the general policy which has been operative in Dichpali since its foundation has been maintained, and only such patients are admitted to the hospital as are likely to respond to treatment. It is felt that the "burnt out" cases are fit subjects not for a hospital but for an asylum, for they cannot face the battle of life unaided. At Dichpali they try to prevent the patients ever reaching the state of mental anguish and physical suffering that is the lot of the victim of advanced leprosy. "We hope," says the report, "that the patients here, after a course of treatment, will be able to return to normal life, and become useful members of society, and we are glad to say that this is generally the case." During the year treatment was carried out along routine lines—i.e., with hydrotocarpus oil and its esters by injection, supplemented by regulated diet and occupational therapy. Gingerly coco nut and ground nut oils, as well as copper sulphate solution, were tried, but it is too early to give an opinion on the permanent therapeutic value of these drugs.

Dichpali is maintaining its reputation as one of the finest leprosy hospitals in India. The Nizam's Government the King's Silver Jubilee Fund the British Empire Leprosy Relief Association and many other friends have been generous in their support so that it has been possible to undertake a heavy building programme. Provision is made at Dichpali

for both work and play. The latest and best methods of farming are taught, while the adult patients undergo elementary education in the adult schools which are held every afternoon. For the children also there are schools where they learn reading, writing, and arithmetic, their gardens provide an outlet for useful manual activity. In the afternoons the boys may be seen playing football, hockey, or badminton with great zest, while in the evenings the time passes pleasantly in dramas, concerts, or at the cinema. Leprosy is now one of the classes attended by students



Sister from Dichpali Leprosy Hospital treating patients out in the villages

of Osmania University—in the capital of the State—proceeding to their M.B., and the State medical department also has continued its usual practice of sending twelve medical officers for post graduate instruction. As a result of this policy, which has been in operation for some years, almost all the medical officers in the Nizam's Government Medical Service are skilled in the diagnosis and treatment of leprosy.

AUSTRALIA

(FROM OUR OWN CORRESPONDENT)

AUSTRALASIAN COLLEGE OF PHYSICIANS

THE Australasian College of Physicians, which is being formed, includes in its scope both the Commonwealth of Australia and the Dominion of New Zealand and it is proposed to model it as far as possible along the lines of the Royal College of Physicians of England. Amongst its objects is the management of post graduate study in medicine, requiring of candidates for admission to the College evidence that they have given intensive study to advances in knowledge in medicine. Regular scientific meetings will be also held.

It was unanimously determined, at a meeting of representative physicians from New South Wales, Victoria, Queensland, and South Australia, that Sydney should be the site of the building of the College. The Government of New South Wales offered to provide £25,000 towards the foundation of the College and the University of Sydney offered a site on which the building could be erected within the precincts of the University. It was, however,

subsequently decided by the Committee of Physicians that it would be more suitable to have the College situated in a more central position in the city. A committee appointed has purchased a building in Macquarie-street the old home of the Warrigal Club.

Certain Victorian donors have signified their intention to provide at least £20 000 to initiate a fund for the permanent endowment of the College when completed. Considerable progress has been made in raising further sums of money for alterations

to the building and for the maintenance of the College when its activities begin.

INFANT MORTALITY IN SOUTH AUSTRALIA

Vital statistics for 1936 show that during the year infantile deaths in South Australia have decreased to the record low rate of 31.08 per 1000 births. In 1935 the rate was 34.95 per 1000. The present death rate is less than half the rate of twenty years ago and about a third of the rate in 1900.

CORRESPONDENCE

MEMORIAL TO THE LATE PROF E H KETTLE, F.R.S

To the Editor of THE LANCET

SIR,—By the death of Edgar Hartley Kettle in December last, pathology in this country lost one of its most distinguished exponents and all who knew him were deprived of a personal friend. We feel sure that those who were associated with him, as colleagues or students in his professional work or in any other of the activities in which he took part, would desire that his memory should be perpetuated in some suitable form.

Kettle's devotion to his subject and to all that concerned it including particularly the interests of his students and younger colleagues was evidenced throughout his professional career. As an original worker, as a director who stimulated the work of others, as a teacher as a senior member and treasurer of the Pathological Society and as an active member of numerous committees he played a part that will not be forgotten. In each of the four university schools in which he directed the teaching of pathology, St. Mary's, Welsh National School of Medicine, St. Bartholomew's and the British Postgraduate Medical School he won the admiration and affection of his colleagues and his students. We feel that a fitting tribute to his memory would be the foundation of a Kettle Memorial Lectureship in Pathology and that this lecture might appropriately be given annually in each of these schools in turn.

An endowment fund is being collected for this purpose, and we are sure that his colleagues and friends, including many who though not pathologists were associated with him in connexion with his pioneer work on silicosis or in other ways would wish to be given the opportunity of contributing. It is suggested that individual contributions should not in most cases be more than two guineas and smaller sums will be welcomed.

Contributions should be sent to the Treasurer Kettle Memorial Fund British Postgraduate Medical School Ducane-road W12. Cheques should be drawn in favour of the Kettle Memorial Fund and crossed Barclay & Co.

We are Sir yours faithfully

BALFOUR OF HURLBURTON
W. GIRLING BALL,
A. L. BOYCOTT
S. LYLE CUMMINS
DAWSON OF PENY
H. R. DRAY
J. HENRY DIBLE,
J. B. DUROU
HERBERT L. JASON
FRANCIS R. FRASER
G. F. GLASE
M. H. GORDON
W. J. GYLL

G. HADFIELD,
JAMES MCINTOSH
ROBERT MUIR
J. A. MURRAY
J. J. ORENSTEIN
A. H. PROCTOR,
JOHN A. RYLE,
A. W. SHEEN
BERNARD SPILSBURY
SQUIRE PRIDDIE,
M. J. STEWART
W. W. C. TOTLEY
C. M. WILSON

May 24th.

OBSTETRICS IN GENERAL PRACTICE

To the Editor of THE LANCET

SIR,—Those who sincerely desire an improvement in our maternity services will be grateful to Prof. Munro Kerr for his letter in your last issue which brings out just the essential points. Most practitioners with experience of general practice realise that owing to the greatly increased demands made on their time since the introduction of the National Health Insurance Act they can no longer give adequate attention to midwifery. Midwifery is now full time work and if we are to avoid the criticism which appears again and again in the Maternal Mortality Report of the Ministry of Health that antenatal work is defective we must have one practitioner with time at his or her disposal responsible for each patient, before during and after her confinement.

I was particularly pleased that Prof. Munro Kerr mentions the need for institutional treatment for primigravidae because public health authorities responsible for the provision of maternity hospitals while most anxious to do what is right are too often advised that midwifery in the home is safer than midwifery in hospital with the result that in most counties maternity hospital accommodation is totally inadequate.

Prof. Munro Kerr is a recognised leader in his profession will he lead the general public to achieve better maternity services?

I am Sir yours faithfully

Station road New Barnet, May 21st. JOHN ELAM.

PERNICIOUS ANÆMIA IN AN INFANT

To the Editor of THE LANCET

SIR,—Dr Hawksley's letter in your issue of May 15th in which he supports the diagnosis of pernicious anaemia of infancy in the case recorded by Langmead and Doniach raises several points that are of interest. First he emphasises the presence and importance of achlorhydria in Langmead's case, yet it is well known that during infancy the gastric acidity is extremely variable that it is frequently low and that in association with ill health especially infectious disease achlorhydria is commonly found.

In answer to my letter of May 8th Dr Hawksley suggests that if at a later date the infant is able to thrive without liver therapy it may be presumed that the so called 'pernicious anaemia' was caused by a temporary cessation of ability either to elaborate or to absorb the anti-pernicious anaemia factor. This may or may not be the explanation but it is hardly justifiable to label a temporary upset in secretion of intrinsic factor true pernicious anaemia—a disease that occurs almost exclusively during the second half of life and in which inability to elaborate the

anti-anæmic factor is permanent Dr Hawksley mentions the analogous situation which may arise in celiac disease, but he will I think agree that we do not label that condition pernicious anæmia.

Among the cases investigated by me, of hæmolytic anæmia of infancy and childhood which showed macrocytosis, the case in which the macrocytosis was most marked and which recovered with the greatest rapidity with liver therapy had a high gastric acidity. In view of this finding it was thought possible that, as a result of prolonged hæmolysis and increased red cell production, the liver factor was temporarily exhausted and that consequently a macrocytic anæmia developed which responded to liver therapy.

I am, Sir, yours faithfully,

Birmingham, May 22nd W CAREY SMALLWOOD

CARCINOMA OF THE STOMACH

To the Editor of THE LANCET

SIR,—In his article on gastric and duodenal ulcer, which appeared in your last issue, Dr Duncan Leys states that "carcinoma of the stomach is mercifully a relatively uncommon disease." But relative to what? If it be a cold in the head or measles in children the answer may be "Yes," but if it be to gastric disorders of middle age—or indeed to any disease of middle age for that matter—the answer is most emphatically "No." I submit that a truer statement would be that carcinoma of the stomach is mercilessly a common disease, whether the word relatively be used or not.

I have to hand the notes of 25 cases which I saw at King's College Hospital during the first eleven months of 1936 alone. Analysis of these cases speaks for itself. No less than 9 of them were clinically inoperable, and of the remaining 16 which were explored, the radical operation was practicable only in 5. The average duration of symptoms in these cases was one year and eight months—another eloquent fact.

Dr Leys's unhappy experience of surgery in this disease is, however, by no means a fair representation of surgery as a whole. He writes "in six years of busy hospital practice, I have not seen a single patient with carcinoma of the stomach whose life has been usefully prolonged by surgery." Most surgeons can claim at least that "lives have been usefully prolonged" by the radical operation in proven cases of carcinoma of the stomach. In a comparatively short experience I can from my own series quote one case alive and well four years and eleven months after operation, and several of shorter duration. Length of history, as is well known, is not always an indication of operability. None the less, surgery could do far more did the cases reach the surgeon earlier. As regards differential diagnosis from other disorders of the stomach—not only peptic ulcer but also chronic gastritis—I would commend the use of the gastroscope as a most helpful adjuvant to radiology.

Figures from the gastric clinic at King's College Hospital, where the cases are primarily seen by my colleague Dr Charles Newman, bear out the experience of Dr Leys as regards the relative frequency of gastric and duodenal ulcer. During the first eleven months of 1936 there attended 82 new cases of gastric ulcer and 61 new cases of duodenal ulcer, including 2 of duodenal stenosis. During the same period there were 21 cases of gastritis.

I am, Sir, yours faithfully,

London W May 20th HAROLD C EDWARDS

"POPULAR" NAMES OF DISEASES IN DEATH CERTIFICATES

To the Editor of THE LANCET

SIR,—The extract from THE LANCET 100 years ago (May 27th, 1837) in your last issue is of much interest. Probably the letter signed by the medical grandees was composed by Farr and the explanatory statement (which is printed on p. 211 of the volume of excerpts from Farr's writings published by the Royal Sanitary Institute in 1885 under the title "Vital Statistics") is pure Farr. The leader writer scores a good debating point enough, but Farr might probably have retorted that his proviso "whenever the popular name will denote the cause of death with sufficient precision" met the real objection. The development of Farr's policy in the matter of registration can be followed very well in the volume of excerpts quoted above. Remembering that Farr himself had any amount of intellectual courage verging, as his successor Ogle evidently thought, on temerity, it is noteworthy how cautious he was in imposing rules of nomenclature. As late as the Sixteenth Annual Report he flatly declined to put an official ban on dropsy. "The permission to use vague terms in these cases, it is objected, encourages negligence, but the refusal to recognise those terms that express imperfect knowledge has an obvious tendency to encourage reckless conjecture." I stoutly resist the temptation to display my King Charles's head on a charger with the label *status lymphaticus*, and content myself with remarking that Farr's conservatism was a great virtue.

I am, Sir, yours faithfully,

Loughton May 22nd

MAJOR GREENWOOD

THE PATELLA

To the Editor of THE LANCET

SIR,—Many surgeons must have had their former conceptions of the functions of the patella rudely shaken by Mr Ralph Brooke's article in the current number of the *British Journal of Surgery*. That the patella can be removed and the power of the knee increased seems to go against all that was taught us in our anatomy studies, yet this is what Mr Brooke has now demonstrated. The explanation of this anomaly is brought out by Prof Hey Groves's paper in the same journal, and it would appear that we must now look upon the patella as a rudimentary structure, a back number like the appendix. Surely this new conception of the mechanics of the patella is aptly to be stated by saying that the patella is a sesamoid bone, not in the tendon of the quadriceps but deep to it, or underneath it. When one dissects back the quadriceps expansion in the new operation of removal, one is surprised at the thickness of the tendon over the patella compared to the lateral expansions—the capsule that one cuts through in the removal of a semilunar cartilage.

The surgeon is sometimes surprised that a patient with a comminuted fracture of the patella due to direct violence is still able to use the knee. The reason for this is now made clear, as the following case brings out.

A clerk aged 50 slipped on some railway stairs hitting his knee cap several times as he fell downwards. He was able to get up, catch his train, and do a day's work. Next day as the knee was swollen he consulted his own doctor and was advised to rest for a few days till the fluid went down. However when he started to use the knee again the fluid returned with a little discomfort, though he was able to walk a mile or so to the station each day. After nearly a fortnight he was advised to come up to hospital. When

he came into the out-patient room he walked with a slight limp, but was able to flex and extend the knee to nearly its full range. The tenderness of the patella suggested a chip off this bone. Radiography however showed a comminuted fracture. As he seemed a suitable case operative removal was decided upon.

When I exposed the patella I found that the prepatellar aponeurosis and the lateral expansions were intact. On incising this I was surprised at the cuff of aponeurosis nearly a quarter of an inch thick which I had to reflect back over the patella to reveal the fragments beneath. This was very different from the frayed ends which one endeavours to sew up in operating to wire a transverse indirect violence fracture. After removal of the bone this aponeurosis came together with ease and when sewn up was certainly as strong as the tendo Achillis. One saw how with this aponeurosis intact the mechanical power of the quadriceps was but little impaired once there was some power of adhesion between the fractured surfaces and the surrounding hematoma so that a pulley action was again possible round the lower end of the femur.

It would be interesting to know the experience of other surgeons with this new operation; both in the case of comminuted and in transverse simple fractures. I am indebted to Mr Alan Todd for kindly allowing me to operate on this patient.

I am, Sir yours faithfully

G O TIPPLET

Devonshire-street, W May 23rd.

THE LIMITED FIELD OF CANCER RESEARCH

To the Editor of THE LANCET

SIR,—A perusal of the thirteenth annual report of the British Empire Cancer Campaign leaves one with the feeling that, as far as treatment by radiation is concerned, too large a share of the available workers and resources is being concentrated on the use of radium and super voltage X ray therapy, a share altogether out of proportion to any reasonable expectation of what can be achieved by these agents, to the detriment of other lines of research. I doubt whether the most optimistic of radium therapists ever hope for so much as a 50 per cent. five year cure of all cases of cancer referred to them for treatment. All experience so far recorded of the use of super voltage X ray therapy indicates that the most to be expected is possibly slightly better results in a very limited class of cases.

The construction of such costly forms of apparatus as radium bombs and super voltage X rays generators would only be justified, beyond one or two acts for experimental purposes, if there were substantial reasons for believing that it would lead to a great advance on all previous methods in controlling cancerous growths. There is no convincing argument in favour of such an expectation. The only justification for this outpouring of treasure and effort is an assumption that the gamma rays of radium possess a greater therapeutic value than X rays which is due to their shorter wave-length, and hence the shorter the wave length of X rays the greater their usefulness.

That radium has been used with more success than X rays in the treatment of malignant disease in certain situations no one will deny, but in these cases besides the difference of the wave length of the radiation there are other important variant factors which are known to exert a powerful influence on the results. To assume that the shorter wave length is the only factor responsible for the better results or even that it is a contributory cause is illogical.

The cavities of the body are the situations in which radium can be used with the greatest advantage because it can be placed in contact with the growth

and its radiation is diminished in intensity before reaching the subjacent healthy tissues. This alone might account for better results, but there is also the time-intensity factor. For a dose of equal intensity a much longer time is required when using radium than when using X rays. This dissimilitude can be lessened by splitting the X ray dose into a number of small daily doses and this practice has been followed by greatly improved results, proving that the time during which the growth is under the influence of radiation is of great importance. By means of the Chaoul technique, brilliant results have been obtained with X rays of long wave-length by bringing the source of radiation very close to the growth—further strong evidence against the assumption that wave length is a factor of importance.

It would be neither a very difficult nor a very costly experiment to compare the action of X rays and gamma rays with the time intensity factor eliminated. By means of a long shield—say an length up to ten feet—the X ray tube could be used at such a distance from the patient and the current could be so adjusted that the intensity of the radiation would be the same as that received from a radium pack in short with X rays the time-intensity factor is entirely under our control.

The assumption that the gamma rays of radium have a therapeutic value that can only be equalled by X rays of equally short wave-length, when they can be generated, is based mainly if not entirely on impressions—they are the impressions of those working with radium and we know quite well that there are very few workers who are free from a strong bias in favour of their own methods. The arguments against this assumption is based on facts. Experiments with drosophila eggs and other test materials go to show that biological reaction is independent of wave length. Then there is the brilliant success of the Chaoul technique in which the X rays are generated with a voltage of only 60 000. And there is also the fact that the results obtained at Erlangen by treating uterine carcinoma with X rays only compare very favourably with the results obtained by the combined use of X rays and radium.

And the claim that super voltage X ray therapy is an advance of any value was to my mind finally disposed of at the thirty-sixth annual meeting of the American Roentgen Ray Society in September 1935. At this meeting after the reading of papers recording poor results of this method Dr Carter Wood of New York City said it would be well to confine the construction and operation of these very expensive forms of apparatus to those now installed in the institutions in various parts of the country. Dr Ruggles whose name is well known also in this country speaking of a year's experience with 800 kv X rays said "From what can be observed in the routine of a clinic they (the patients) do about as well as those treated at 200 kv."

Neither theoretically nor from practical experience have we any reason to expect any outstanding advance in the treatment of cancer by the use of X rays of very short wave length.

At the same meeting of the American Roentgen Ray Society an account of which is well worth the study of those controlling research in this country a paper was read by three radiologists reporting three cases two of advanced carcinoma mammae one of which had wide-spread bone metastases and one of lymphoecarcinoma involving the lymph nodes of almost the entire body, all well and clinically free from disease five years after treatment. The treatment

was X radiation of the whole body and endocrine glands extending over a year. In view of the uncertainty of the effects of whole body radiation only these three cases had been treated up to two years ago. Here is a method by which there is some possibility of a great advance, yet there is nothing in the report of the British Empire Cancer Campaign about research in this direction, nor the radiation of large areas of the body with a view to increasing the patient's resistance to the cancerous invasion and increasing the radio-sensitivity of malignant growths.

I am, Sir, yours faithfully,

Dover, May 22nd

WILFRID GARTON

TRACHOMA IN REFUGEE CHILDREN

To the Editor of THE LANCET

SIR,—Lord Lloyd in the House of Lords last night performed a public service by asking a question as to the incidence of trachoma among the refugee children from Spain who have arrived in this country. It is known that in many of the provinces of Spain the disease is practically universal. Lord Lloyd was informed that a voluntary body called the National Joint Committee for Spanish Relief sent out some doctors to examine the children before they left Bilbao. It is not reported that any of these gentlemen had any experience of trachoma or even any special knowledge of ophthalmology. The examination of the eyes of 4000 children by port medical officers on arrival at Southampton was an absolute impossibility. It is therefore still unknown what proportion of the children if any is trachomatous. The difficulty in making a diagnosis in the early stages of the disease, its contagious nature, the long period required for treatment, and its devastating effects on visual acuity make it important to decide the matter.

If the children are to be kept segregated in a camp no danger will accrue to the surrounding inhabitants. On the other hand, if a few of them are trachomatous and are temporarily placed in Salvation Army or other homes in contact with other children there is every expectation of a recrudescence of the disease in this country. In this matter the responsibility of the Ministry of Health is very great.

I am, Sir, yours faithfully,

A F MACCALLAN,

President of the International Organisation
against Trachoma

London May 26th

MIDDLE-EAR DISEASE IN INFANCY

To the Editor of THE LANCET

SIR,—I was very interested in the leading article in your last issue. At the Hospital for Sick Children, Great Ormond street, it has been recognised for some years that pus in the middle ear and mastoid is a frequent autopsy finding, especially in infants dying of gastro enteritis. I have just looked through the post-mortem records of the past two years and observe that out of the 170 autopsies in which the middle ears were examined, just over 50 per cent had pus in one or both. This agrees closely with Dr Ebbs's figures for a much larger series. All but a small proportion of these positives were in children under two years of age. Another fact that emerges is that a much higher proportion of children dying from gastro enteritis have pus in their middle ears than those dying from other diseases. Thus 33 (65 per cent) out of 43 cases of gastro enteritis had one or both ears infected whereas of 100 children under two dying of some other disease only 44 had pus in one or both middle ears.

From these figures it seems that the infant suffering from gastro enteritis is particularly liable to a middle

ear infection. The gastro intestinal infection is, I think, undoubtedly in some cases secondary to the otitis media, but, in my view, in the majority of cases the otitis supervenes during the course of the gastro enteritis and, as Dr Ebbs suggests, may contribute to the fatal issue.

All who have to deal with these patients know how difficult of diagnosis the otitis media may be. Not only are there no symptoms but frequently the appearance of the drum is normal. It must be a common experience for the ears to be pronounced normal only to find them full of pus at the autopsy a day or two later. One should never hesitate to incise a drum should there be any suspicion, such as a sudden unexplained rise of temperature would provoke, that the middle ear has become infected.

The ventilation of this difficult subject at the Royal Society of Medicine discussion should stimulate both otologists and paediatricians to coöperate in investigating this widespread malady.

I am, Sir, yours faithfully,

G H NEWNS

Hospital for Sick Children, Great Ormond street,
May 25th

A REMEDY FOR HÆMORRHOIDS

To the Editor of THE LANCET

SIR,—In your issue of May 22nd (p. 1261) you refer to a very recent paper in the *Revista sud americana de endocrinologia, inmunologia y quimio-terapia* in which an oily solution of an extract of the earthworm *Microcolex dubius* (Fletcher) is recommended as a remedy for piles. It may perhaps interest your readers to learn that this is a very ancient treatment. Stephenson, in his monograph on the *Oligochaeta*, quotes Damiri, the author of an Arabic treatise on the life of animals written in A.D. 1371, as saying that suppositories made from earthworms fried in olive oil and powdered are highly beneficial to persons suffering from piles.

I am, Sir, yours faithfully,

C C A MONRO

British Museum (Natural History) Cromwell road,
S W May 22nd

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED
MAY 15TH, 1937

Notifications.—The following cases of infectious disease were notified during the week. Small pox, 0; scarlet fever, 1440; diphtheria, 781; enteric fever, 24; pneumonia (primary or influenzal) 798; puerperal fever 26; puerperal pyrexia 108; cerebro-spinal fever 30; acute poliomyelitis 5; acute polio encephalitis, 2; encephalitis lethargica, 5; continued fever, 1 (Nuneaton); dysentery, 16; ophthalmia neonatorum 76. No case of cholera, plague or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 21st was 2967 which included scarlet fever 783; diphtheria 846; measles 76; whooping-cough 496; puerperal fever 17; mothers (plus 12 babies) encephalitis lethargica 83; poliomyelitis 0. At St Margaret's Hospital there were 20 babies (plus 12 mothers) with ophthalmia neonatorum.

Deaths.—In 123 great towns including London, there was no death from small-pox. 3 (0) from enteric fever, 13 (0) from measles, 3 (0) from scarlet fever, 20 (0) from whooping cough, 19 (3) from diphtheria, 57 (13) from diarrhoea and enteritis under two years, and 36 (5) from influenza. The figures in parentheses are those for London itself.

The fatal cases of enteric fever were at Portsmouth, Southampton and Southend-on-sea. Liverpool reported 3 deaths from whooping cough. Diarrhoea was fatal in 3 cases each at Liverpool and Nottingham.

The number of stillbirths notified during the week was 277 (corresponding to a rate of 13 per 1000 total births), including 51 in London.

OBITUARY

FREDERICK EDGE M.D. M.R.C.P. Lond.,
F.R.C.S. Eng.

Dr Frederick Edge who died at Wolverhampton on May 17th was born in Russia in 1863 the son of William and Mary Pollitt Edge. He was educated at Owens College Manchester and St. Thomas's Hospital, London qualifying in 1886 and taking higher diplomas after further study at Munich, Vienna and Dresden. Five years after qualifying he settled in Wolverhampton and was shortly appointed honorary surgeon to the Women's Hospital then in St. Mark's road. A few years later he joined the staff of the Birmingham and Midland Hospital for Women and on both these hospitals he served for thirty years or more. Later he was attached to the Birmingham Maternity Hospital and examined for the Central Midwives Board. Before his hospital appointments because too pressing he was a member of the Wolverhampton town council. He married the daughter of Isaac Bradley of Codsall House Staffordshire, and leaves two sons and a daughter.

J. H. S. writes. In the week that Frederick Edge died there appeared in *THE LANCET* an article entitled 'Perspective and Poise in Practice'. These words epitomise the whole personality of Dr Edge for he possessed these qualities in relation not only to practice but to the art of living itself. Endowed with an unusual facility for friendship which found no difficulty in bridging a disparity of years amounting often to half a lifetime, the love and veneration in which he was held is no matter for surprise. His passing touches many of us deeply. To these qualities was added a certain flavour of individuality—both in point of view and its expression—which derived perhaps from the mixture of Slav and Saxon temperament in his veins and added point to his personality marking him off from the mean of the normal man. His professional life was spent in Birmingham and Wolverhampton. To the latter town (from which these notes have been written) his services were immense. To mention but one point from the many that spring at once to mind the fusion of two hospitals is rarely accomplished without friction between the numerous personalities involved but the amalgamation between the Royal Hospital and the Women's Hospital at Wolverhampton was saved from this very largely through the presence of Dr Edge in our midst. He was made the first chairman of the medical committee of the new hospital and so rare a power did he show of smoothing difficulties and of keeping us all not only happy and agreeable but—so rare in such committees—to the point as well that what had invariably been a yearly tenure was in his case by unanimous desire made into a triennium. Whether in practice at the bridge table at the deciding putt on the 18th green or in the presence of some administrative or other difficulty Frederick Edge was a connoisseur of life with a zest—and a sagacity—all his own. We shall not easily see his like again.

JOHN POLAND F.R.C.S. Eng.

With the death of Mr Poland at his home at Seal Kent on May 22nd medicine loses a distinguished orthopaedist and London a distinguished citizen. Mr Poland was grandson of a Sheriff of London he was himself a Master Skinner and one of his sons is City Marshal. Born at Blackheath in 1865, he qualified from Guy's Hospital in 1870 taking the

F.R.C.S. Eng. three years later. He was demonstrator of anatomy and surgical registrar at the hospital going on to the Queen's Hospital for Children where he was registrar and anaesthetist. He attached himself to the Miller General Hospital at a time when it was emerging from the Royal West Kent Dispensary and became its senior surgeon holding also similar positions at the Royal National Orthopaedic and the City Orthopaedic Hospitals. He edited and brought up to date the collected lectures on 'Bodily Deformities' delivered at the latter by his predecessor E. J. Chance adding two lectures of his own on club foot and he was for many years surgical secretary of the Hunterian Society delivering the Hunterian oration in 1901 and becoming president in 1906. Mr Poland was 81 years of age. His wife a daughter of James G. Denham predeceased him in 1932.

RICHARD THOMAS WILLIAMSON, B.Sc. Vict.
M.D., F.R.C.P. Lond.

Dr R. T. Williamson who died on April 28th at his home in Surrey had retired twenty years ago from his position as physician and neurologist in Manchester and the announcement of his death will recall to the older generation the memory of a wise clinician, a stimulating teacher and an ardent seeker after truth. Williamson was a Lancashire man by birth and education. He did his schooling at Burnley and Owens College Manchester qualifying in 1884 when he was only 23 years old. He was house physician at the Infirmary went on to demonstrate physiology at Birmingham and to take a house appointment at the National Hospital, Queen's square. Having there gained a taste for neurology it remained his primary interest in medicine when he returned to Manchester to work his way up to staff appointments at Ancoats and the Royal Infirmary. His earliest publication however was a monograph on diabetes. Dreschfeld, in his lecture course of medicine left to Williamson the whole department of neurology. In 1908 Williamson published his *Diseases of the Spinal Cord* a book which was illustrated more profusely than almost any medical book of that time and its success was such that a second edition was called for within a few years. None of his colleagues at the Infirmary used the ophthalmoscope in diagnosis of disease to anything like the extent he did and he was the first one of them to examine the fundus by direct vision using an unenclosed candle as his means of illumination. He did a great deal of practical laboratory work, fixing, cutting, staining his own specimens and drawing illustrations from them for use in papers or book. His health was never robust and in 1917 when 55 years of age he was obliged to give up his active professional life. Retirement to the south gave him the opportunity



DR WILLIAMSON

for historical writing, the taste for which dated from a visit to Vienna in his student days. Many stories and short sketches appeared in a New York journal, and in 1927 he embodied some of his own experiences in a book entitled "The Log of an Old Physician."

A colleague writes: "Many students of the Manchester Medical School will have friendly and happy memories of the work they did with R. T. Williamson. He was ever ready to help in the difficult paths of medicine and though his lectures might go beyond the understanding of his audience his bedside help—freely given—was always of the greatest use and benefit. He delighted in tackling a difficult case and in the end his opinion was usually right. Though he was unimpressive on first acquaintance and retained the speech and mannerisms of his native county to the end, his kindness and his knowledge made a deep impression on those who knew him. Medically his chief interests were in neurology and in diabetes mellitus. In both of these subjects he did keen research work, relying on his own examinations and estimations in all that he did. His published books are full of original observations, pictures, and diagrams. The treatment of diabetes brought him a large practice. Later in life he took a keen interest in school hygiene and after his retirement from practice, when he had settled in Barnes, he turned to history, spending long hours at the British Museum."

"There was much that was tragic in his life. Naturally of an introspective nature he was saddened by two events—the death of his mother, who was killed in a street accident, and that of his wife—who

was of Thuringian birth—who died with thrombosis after a minor surgical operation. His later thoughts often turned on the ways these two deaths might have been avoided."

The picture is from a photograph in the Manchester University Medical Library taken before his retirement.

JAMES ADAMS, M.D. Aberd., F.R.C.S. Eng.

THE death at Eastbourne on May 10th of Dr James Adams removes the elder of two brothers, both of whom qualified from St Bartholomew's Hospital in the early 'seventies. James was born near Salcombe, Devon, in 1850, and was educated at the University of Aberdeen. After qualification he was resident at the West London Hospital and at the Brooke House Asylum, Clapton, before returning to Devon to practise at Ashburton, where he was surgeon to the local hospital and became chairman of the West Country Association. In 1888 he took the F.R.C.S. Eng. and moved to Eastbourne, where he spent the remaining 50 years of his life. He was attached for many years to St Mary's Hospital, where he had the reputation of being a specially skilled operator. Many short contributions to our own columns indicate the wide range of his surgical interest. For some time he was deputy medical officer of health. In private life he was a man of social gifts, keen on gardening and skilful at chess, presiding over the Eastbourne Chess Club. His wife predeceased him, and his only son is senior surgeon at Penang. His brother, Mr John Adams, F.R.C.S., is still living in London.

ROYAL INSTITUTE OF PUBLIC HEALTH AND INSTITUTE OF HYGIENE

Lord Horder presided over the inaugural meeting of the Congress of the Royal Institute of Public Health and the Institute of Hygiene which was opened at Margate on May 25th. In his address on health education, Lord Horder pointed out that the healthiness of the individual was bound up with the art of living and was inseparable from the conduct of life. He emphasised the importance of the formation of sound habits, which must of necessity be first inculcated by the parent. Touching on the relation of medicine, first in its study and then in its application, he maintained that the function of the doctor should be more educative than corrective; healthiness is a positive concept, not merely the absence of disease. Lord Horder summarised the rôle of local authorities and their staffs in combating infectious disease, in protecting foodstuffs, in securing satisfactory shelter for the individual and the provision of fresh air and pure water, all powerful factors in promoting health. Nevertheless he submitted that to aim at extending life was not everything—not even the main thing—the chief problem being how to live more happily. He considered that just as we can organise for defence, we can organise for health and happiness.

While admittedly great strides had been made much more remained to be done. Although adulteration of food was controlled, we had not yet begun to tell the people what foods they required for health. Though occupational disease had been reduced, occupational fitness had also diminished. In a list of conditions calling for remedy he included crowding, fatigue, the conditions of railway travel and the prevalence of preventable noise. The maternal mortality rate, the high incidence of tuberculosis

in young women, and the appalling ravages of minor illnesses which result in loss of time and wages must also be reduced. He advocated the extension of insurance to the families of the workers and urged the care of the pre-school child, pointing out that preventive medicine was most active when it concerns itself with those matters on which public opinion and attention have already been directed.

At the conclusion of the meeting two presentations were made by Lord Horder. The first was the Harben medal, given by the Institute of Hygiene every third year as a reward for eminent services. The recipient this year was Sir Gowland Hopkins, F.R.S. The other was the Smith award, given triennially by the terms of the trust to the medical officer of health who was deemed to have performed the most noteworthy work in the department of preventive medicine. This (second) award was made to Dr Charles S. Thomson, medical superintendent officer of health, City of Belfast.

THE LANCET 100 YEARS AGO

May 27th, 1837, p. 351

ROYAL MEDICAL AND CHIRURGICAL SOCIETY

From a contribution made by Dr J. JOHNSON to a discussion on nervous affections peculiar to young women, causing contraction of the muscles of the extremities, accompanied by increase, diminution or absence of sensation, or motion held at the Royal Medical and Chirurgical Society on May 27th 1837.—Dr BRIGHT, President.

The cases of Dr Wilson proved that hysterical affections particularly in young women might simulate organic disease occurring in every part from the head to the foot even taking on the character of white swelling, loss of vision &c. He thought the author had acted wisely in advancing no theory on the subject, the idea of the uterus wandering from one part of the body to another, was as good as any that had been adduced.

TUESDAY, MAY 25TH

Officers Invalided Out of the Army

Mr CHORLTON asked the Secretary of State for War the number of officers invalided out of the Army as a result of accident or sickness during their first 10 years of service in the years 1933, 1934, and 1935 or the latest convenient dates—Mr DUFF COOPER replied: The numbers for 1933, 1934, 1935, and 1936 were 6, 6, 4, and 6 respectively.

Housing in Scotland

Mr BARR asked the Secretary of State for Scotland what was the total number of houses completed in Scotland with State assistance from 1919 till March 31st 1937 or the last available date and the total amount of State subsidy paid in respect thereof—Mr ELLIOT replied: The total number of houses completed in Scotland with State assistance from 1919 till March 31st, 1937, is 215,537. The total amount of State subsidy paid up to that date is £23 549 148.

Treatment of Tuberculous, Crippled, and Orthopaedic Cases

Mr WILSON asked the Secretary of State for Scotland the annual cost for the treatment of tuberculous crippled, and orthopaedic cases—Mr ELLIOT replied: Local authorities in Scotland incurred a net expenditure of £640,670 on the treatment of tuberculosis in the year 1934-35, the latest year for which information is available. Orthopaedic and cripple cases are dealt with by local authorities under their tuberculosis, child welfare, and

school health schemes but I regret that a separate figure for this expenditure is not available.

A Factory Code

Mr RHYE DAVIES asked the Home Secretary whether in view of the complexity of the Factories Bill, he would issue from his department, when the Bill became law a Factory Code as a plain guide to the new Act, somewhat similar in character to the Highway Code—Mr R. S. HUDSON, Parliamentary Secretary to the Ministry of Health, replied: It will clearly be necessary to issue some kind of explanatory statement. I cannot anticipate now what form it may take, but the hon. Member's suggestion will be borne in mind.

Staffordshire Hospital Arrangements

Mr MANDER asked the Minister of Health the present position with regard to the Staffordshire county council scheme for dealing with invalids and old persons which came into operation on April 1st in Wednesfield, Willenhall, and other districts, whether a reply from the council to his letter had now been received, and whether there was yet a resident medical officer at the Wordsley institution—Mr HUDSON replied: I understand that the position remains as stated in the reply given to the hon. Member's question on this subject on April 8th, and that the county council will not have an opportunity of submitting a report to my right hon. friend until after their next meeting in July. As regards the last part of the question, I am informed that there is now a temporary medical officer resident at the Wordsley institution pending the making of a permanent appointment.

MEDICAL NEWS**University of Oxford**

Dr A. G. Gibson, reader in morbid anatomy in the University, has been constituted Nuffield reader in morbid anatomy while holding the office of honorary pathologist at the Radcliffe Infirmary. He will receive a stipend of £500 a year. Dr B. G. Macgrath has been appointed university demonstrator in pathology from May 1st, 1937, to Sept. 30th, 1941.

University of London

Mr John Kirk has been appointed from Oct. 1st to the S. A. Courtauld chair of anatomy tenable at the Middlesex Hospital medical school.

Mr Kirk is 55 years old. He graduated M.B. at the University of Edinburgh in 1904 and after holding hospital appointments was engaged in medical missionary work in China from 1907 to 1928. In the East he continued his studies in human anatomy and when the new buildings at the Kung Lee Medical College, Canton, were opened in 1924 he was invited to organise and take charge of the department of anatomy which was the first of its kind in South China. During the first of his two periods of furlough (1913-14) he was admitted a fellow of the Royal College of Surgeons of Edinburgh and during his second furlough (1921-22) he was a full time demonstrator in the University of Birmingham. For six years he was a member of the council of medical education of the China Medical Association, was chairman of the Association during the biennium 1927-28, and president from 1925-27, and he acted as chairman of the joint conference of the Chinese Association and the Hong Kong and South China branch of the British Medical Association held at Hong Kong in 1925. In 1920 he visited Canada and the United States as a member of a delegation financed by the Rockefeller Foundation for the purpose of reorganising support in these countries for the Canton Hospital as a centre of medical education in South China. He returned to England in 1928 and since then he has been on the staff of University College, London from 1928-30 as a full time demonstrator of anatomy and since 1930 as senior demonstrator. For the past six years he has also had charge of the class of anatomy preparing students for the primary F.R.C.S. examination. He is also sub-dean of the faculty of medical science of University College and for the past four years has had the additional duties of senior tutor in the faculties of medicine, science, and engineering.

The title of professor of morbid anatomy in the university has been conferred on Dr W. D. Newcomb in respect of the post held by him at St. Mary's Hospital medical school.

Society of Medical Officers of Health

Dr James Fenton, medical officer of health for the Royal Borough of Kensington, has been elected president of this society for the session 1937-38. Dr Fenton is chairman of the Central Council for Health Education and is a past chairman of the Royal Sanitary Institute.

University of Egypt, Cairo

Dr A. Cecil Alport has been appointed professor of clinical medicine and director of the medical unit of the university.

Dr Alport graduated in medicine at the University of Edinburgh in 1906 and during the war worked in the 28th and 41st General Hospitals and at the Royal Herbert Hospital, Woolwich. He also acted as specialist in medicine to the latter hospital and as consultant in tropical diseases to the Ministry of Pensions. In 1919 he took his M.D. degree at Edinburgh and in 1920 he became a member of the Royal College of Physicians of London. He was elected to the fellowship this year. Dr Alport at present holds the position of assistant to the director of the medical unit of St. Mary's Hospital. He published a text book on nephritis in 1920 and has also written on malaria and splenic anaemia.

Commonwealth Fund Fellowships

Commonwealth fellowships in medicine have been awarded to Dr D. M. Douglas and Dr J. D. Spillane. Dr Douglas intends to work at the University of Minnesota and Dr Spillane at Columbia University.

International Faculty of Sciences

On May 31st, at 7.30 p.m. at the Gaumont British Theatre, Film House, Wardour street, London W., Dr S. Monckton Copeman, F.R.S., will give a lecture on experimental work bearing on the treatment of cancer, it will be illustrated with a film and lantern slides. Those who wish to attend should notify the hon. secretary, Hazlett House, Southampton Buildings, W.C.2.

British Association of Radiologists

The third annual general meeting of this association will be held at the British Institute of Radiology, 32 Welbeck street, London W., on Friday, June 11th, and on Saturday, June 12th. On the first day of the meeting Dr F. Herniman-Johnson will deliver the Skinner lecture on the after care of patients suffering from cancer of the breast. A paper on wave length as a factor in radiotherapy will be read by Mr C. F. Stebbing and Prof. J. M. Woodburn Morrison and Dr S. B. Adams will open a discussion on low voltage near distance X-ray therapy. On the second day the following will speak: Dr L. Lasholm (radiological experience in ventriculo-graphy), Dr H. W. A. Post (salpingography), Dr F. Rohan Williams (urography in pregnancy), Dr H. M. Worth (the use of hypoderm in the localisation of spinal tumours) and Dr M. H. Jupp (some observations on cases of suprarenal tumour).

Dr L W Dryland and Dr Josiah Walker have been appointed deputy lieutenants for the county of Northampton

London Hospital

On Tuesday July 6th at 3 p.m. Sir Kingsley Wood the Minister of Health will distribute the prizes to students of this hospital in the college library

Tuberculosis Association

The annual provincial meeting of the Tuberculosis Association will be held at the Central Library, Manchester on June 10th 11th and 12th under the presidency of Dr S Roodhouse Gloyne

Royal Eye Hospital

The clinical society of this hospital will hold a meeting on Wednesday June 2nd at 5.30 p.m. at which a number of cases will be shown and discussed. All medical practitioners are invited and further particulars may be had from the hon secretary at the hospital St George's circus, London S.E.

Demonstrations of Contraceptive Technique

On Wednesday June 2nd at 2.30 p.m. a practical demonstration of the technique of the use of a variety of contraceptive methods will be given by Mrs Marie Stopes D.Sc. and Dr Evelyn Fisher. Medical practitioners and senior students should apply for tickets to the hon secretary of the Society for Constructive Birth Control 108 Whitfield-street London W 1

Society for the Provision of Birth Control Clinics

A lecture on the theory and practice of contraception will be given to medical practitioners and medical students by Dr Greta Graff on Friday June 11th at 6 p.m. at the Walworth Women's Welfare Centre 158A East-street London S.E. Practical demonstrations will be given on Friday June 18th at 6 p.m. and at 7 p.m. further information may be had from the secretary at the clinic.

Wellcome Chemical Works Dartford

Mr Sydney Smith Ph.D. has been appointed works manager at the Dartford works of Messrs. Burroughs Wellcome and Co. in succession to Mr H. A. D. Jowett D.Sc. who met his death in a car accident last August. Dr Smith has been associated with Messrs. Burroughs Wellcome and Co. for 23 years and has made many contributions to the study of the alkaloids of ergot and the glucosides of digitalis

Fellowship of Medicine and Post Graduate Medical Association

The following all-day courses will be held during the summer months: gynaecology Chelsea Hospital for Women (June 14th to 20th); proctology St Marks Hospital (July 5th to 10th); dermatology Blackfriars Skin Hospital (July 12th to 24th afternoons only); urology All Saints Hospital (July 12th to 31st). Week-end courses will be held as follows: obstetrics City of London Maternity Hospital (June 12th and 13th); general surgery Prince of Wales General Hospital (June 19th and 20th); diseases of heart and lungs, Victoria Park Hospital (July 3rd and 4th); medicine and surgery Miller General Hospital (July 10th and 11th). Courses to be held in preparation for the M.R.C.P. examination are: clinical and pathological course at the National Temperance Hospital (8 p.m. Tuesdays and Thursdays, June 1st to 7th); course in chest diseases at the Brompton Hospital (twice weekly 5 p.m. June 7th to July 13th); course in diseases of the heart and lungs Victoria Park Hospital (Wednesdays and Fridays 6 p.m. June 9th to July 3rd); course in neurology West End Hospital for Nervous Diseases (afternoons, June 21st to July 3rd) fundus oculi demonstration 8.30 p.m. July 6th; pulmonary tuberculosis demonstration at Preston Hall July 3rd. Full particulars of all courses and demonstration can be had from the secretary of the fellowship at 1 Wimpole-street London W

The address of the Institute for the Scientific Treatment of Delinquency has been changed from 50 Grosvenor-street to 8 Portman-street London W 1

Memorial to Young and Noguchi

The government of the Gold Coast is erecting a memorial to William Alexander Young and Hideyo Noguchi who died from yellow fever in 1928 while working at the Medical Research Institute at Accra where Young was the director. In their memory a bronze tablet will shortly be placed in a room at the Institute and a small drinking fountain in front of the out patient block of the Gold Coast Hospital

International Union against Tuberculosis

The executive committee of the union has placed at the disposal of the governments and associations belonging to the union a biennial prize of a value of 2500 French francs in memory of the late Prof Léon Bernard who was founder and for fourteen years, the secretary general of the union. The prize will be awarded for the first time in 1938 to the author of an original essay on the social aspect of tuberculosis in French or in English. The essays must be typewritten or printed and must not exceed 10 000 words. They must be forwarded by a government or an association belonging to the union to the secretariat 66 Boulevard Saint Michel Paris (VIIe) not later than May 1st, 1938

International Union against Cancer

Twenty-one different countries sent delegates to a meeting of the general committee of the International Union against Cancer which took place in London over the week-end. They were entertained to luncheon on Saturday by the executive committee of the British Empire Cancer Campaign, and on Saturday evening they were invited by His Majesty's Government to a dinner at Lancaster House at which Sir Kingsley Wood presided. The chief business discussed by the delegates was the programme for the next International cancer congress, which it was decided should be held in Atlantic City in September 1939. The two official British representatives on the general committee are Dr W. Cramer and Mr Cecil Rowntree from whom any further information can be had

Society for Relief of Widows and Orphans of Medical Men

The annual general meeting of this society was held on May 19th with Mr V. Warren Low the president in the chair. During 1936 21 new members were elected, 9 died and 1 resigned; the membership on Dec 31st was 276. The total income for the year was £2392 and £2275 was distributed in relief to the 59 widows and 9 orphans in receipt of grants. This is an increase of £1000 over the previous year. Special grants, amounting to £217 10s., were made from the Brickwell fund to orphans to enable them to study for some business or professional careers. The president announced that in 1938 the society would be celebrating the 150th anniversary of its foundation. Membership of the society is limited to registered medical men who at the time of their election reside within twenty miles of Charing Cross. Further information may be had from the offices of the society 11 Chandos-street London W 1

Vacancies

For further information refer to the advertisement columns under *London Information*—See Col. O for Out patient Dept

- Attercliffe General Hosp*—Gen and Jun H.S. at rate of £150 and £120 respectively
- Albion Hosp*—Birminghamshire Hosp—Gen Res M.O., at rate of £200
- Barnsley District Hosp and Dispensary*—H.P., £200
- Bathurst General Hosp*—Latimer Park H.S.—Hon. Radio
- Belfast Royal Maternity Hosp*—Res M.O. at rate of £3
- Birmingham Dudley-road Hosp*—Jun M.O. at rate of £250
- Birmingham General Hosp*—Res Surg Reg £100-£120
- Birmingham General Hosp*—Asst School M.O. and Asst M.O. H., £200
- Blackburn Royal Infirmary*—Res H.S. £175
- Bristol Children's Hosp*—H.P. £120
- Bristol Royal Infirmary*—Hon. Asst. Physician.
- Brighton Royal Sussex County Hosp*—Officer of Hon. M.O., Dept. for Treatment of Early Nervous Disorders Hon. Surg. Reg. H.S., £150. Asst. Ch. H.P. £150
- Bristol and Gloucestershire Medical School*—H.—Three H.S. to Surgical Unit at rate of £105

- Burnley Municipal General Hosp.—Jun Res M O at rate of £100-£200
- Cardiff King Edward VII Welsh National Memorial Assn—Asst Res M O for Spec Hospitals each £200
- Central London Throat Nose and Ear Hosp Gray's Inn road W C—Hon Assts to Out patient Dept
- Central Middlesex County Hosp Willesden—Visiting Ear Nose and Throat Surgeon 3 guineas per session Two Res Asst M O's each £400 Also Res Cas M O £350
- Children's Hosp 30 College-crescent Hampstead N W—Res M O at rate of £150
- City of London Hosp for Diseases of the Heart, &c Victoria Park E H P, at rate of £100
- City of London Maternity Hosp City road EC—Asst Res M O, at rate of £80
- Connaught Hosp Orford road E—Sen Res M O at rate of £175 Also H P, H.S., and Cas O, each at rate of £110
- Coverly and Warwickshire Hosp—Res H S Cas O, and Res H S to Aural and Ophth Depts each £150
- Coverly, City of—Asst. M O (Woman), £500
- Croydon Mental Hosp Upper Warrington—Asst M O £100
- Derbyshire Hosp for Sick Children—Res H S, at rate of £130
- Derbyshire Royal Infirmary—Cas O and Orthopaedic H S, £150
- Dreadnought Hosp, Greenwich S E—Receiving Room Officer, at rate of £200 Also H P and H.S., each at rate of £110
- Dudley Guest Hosp—Second H S, £120
- Gloucestershire Royal Infirmary—H.S. at rate of £150
- Gloucestershire Royal Infirmary and Eye Institution—H P at rate of £150
- Golden Square Throat Nose and Ear Hosp, W—House Anaesthetist and H S, £150 and £100 respectively
- Guildford, Royal Surrey County Hosp—H S at rate of £150
- Hallifax Royal Infirmary—Third H.S., at rate of £150
- Hampstead General and North West London Hosp, Haverstock Hill W—Cas Surg O for Out patient Dept., at rate of £100
- Hawkmoor Sanatorium near Bovey Tracey—Res Asst M O at rate of £250
- H V Colonial Medical Service—Vacancies for M O's, £800-£100
- Holland (Lincolnshire) County Council—Asst M O H £600
- Hosp for Tropical Diseases Gordon street W C—H P, at rate of £120
- Hosp of St John and St Elizabeth, 60, Grove End road N W—Ophth Surgeon
- Huddersfield St Luke's Hosp—Res M O £200
- Hull Royal Infirmary—H S to Ophth and Ear, Nose, and Throat Dept Second H P and Second Cas O, each at rate of £150
- Institute for the Scientific Treatment of Delinquency, Portman street W—Med Reg, £300
- Ipswich East Suffolk and Ipswich Hosp—Cas O H S to Orthopaedic and Fracture Dept Also H S to General Surg and Genito Urinary Surgeon, each £144
- Kettering and District General Hosp—Res M O and Second Res M O £100 and £140 respectively
- Kingston and District Hosp—Res Asst M O at rate of £375
- Lancashire County Council—Asst County M O H, £800
- Leeds Menston Mental Hosp—Asst M O £350
- Leicester City Isolation Hosp and Sanatorium—Res M O, at rate of £300
- Leicester Royal Infirmary—Res Radiologist, at rate of £200
- Liverpool University—Research Asst. in Dept of Medicine £600
- Also Demonstratorship in Anaesthesia Part time £100
- London County Council—Asst M O's (Grade I), each £350
- Also Asst M O's (Grade II) each £250
- London Jewish Hosp Stepney Green E—Res Cas O £100
- Manchester Ancoats Hosp—Res Surg O £200
- Manchester and Salford Hosp for Skin Diseases—H.S. at rate of £150
- Manchester Booth Hall Hosp for Children—Res Surg O £100
- Manchester Ear Hosp, Grosvenor square—Res H S, £120
- Manchester St Mary's Hosps—H.S. s each at rate of £50
- Manchester Victoria Memorial Jewish Hosp Cheetham—Jun H S and Res M O, at rate of £125 and £150 respectively
- Marie Curie Hosp 2 Fitzjohn's avenue, N W—Res M O
- Ministry of Health Whitehall—Staff M O's £847
- National Temperance Hosp Hampstead road N W—Cas O, at rate of £120
- Neerac upon Tyne, Barrasford Sanatorium—Res Med Asst £250
- Newport Mon Royal Gwent Hosp—Two H.S. s each at rate of £135
- Norwich Jenny Lind Hosp for Children—Res M O £120
- Norwich Norfolk and Norwich Hosp—Two General H.S.'s each £120
- Nottingham County Council—H S for City Hosp at rate of £150
- Nottingham General Hosp—H.S. for Ear Nose and Throat Dept at rate of £150
- Oldham Royal Infirmary—H.S. Also Cas O and H S to Fracture Dept each at rate of £175
- Oxford Brasenose College—Hulme Lectureship in Physiology £350
- Oxford Wingfield Morris Orthopaedic Hosp Headington—Lord Nutfield Scholarship in Orthopaedic Surgery £200
- Illymouth City General Hosp—Jun Asst M O at rate of £250
- Plymouth Prince of Wales's Hosp, Greenbank road—H P and H.S. each at rate of £120
- Pontefract General Infirmary—Jun Res M O at rate of £150
- Preston and County of Lancaster Royal Infirmary—Res H S and H S each £150
- Preston County Borough—Asst School M O £500
- Princess Elizabeth of York Hosp for Children Shaftesbury E—H P H.S. and Cas O each at rate of £125
- Princess Louise Kensington Hosp for Children St Quintin avenue W—H.S. at rate of £120
- Queen Charlotte's Maternity Hosp Marylebone road W—Hon Gen Surgeon Also Obstet Surgeon to In patients
- Queen Mary's Hosp for the East End Stratford E—Clin Asst to Skin Dept
- Queen's Hosp for Children Hackney road, E—H P and Cas O each at rate of £100
- Reading Royal Berkshire Hosp—Cas O at rate of £150
- Rochester St Bartholomew's Hosp—H P at rate of £150
- Rotherham Hosp—Cas H.S. £150 Also H.S. for Ophth and Ear Nose and Throat Depts £120
- Royal Air Force Medical Service—Commissions
- Royal London Ophthalmic Hosp, City road, EC—Out patient Officer £100
- Royal Naval Medical Service—M O's
- Salford Royal Hosp—Two H.S. s each at rate of £125
- St John's Hosp Lewisham S E—Orthopaedic Registrar
- St Mark's Hosp for Cancer &c City road EC—H.S., at rate of £65
- St Peter's Hosp for Stone &c Henrietta street W C—Clin Asst to the Hon Staff
- St Thomas's Hosp S E—Physician
- Sheffield Children's Hosp—H S £100
- Sheffield Jessop Hosp for Women—Asst in Hosp Labs, £300
- Res M O and Sen Res O each at rate of £150 Also Three H.S. s each at rate of £100
- Sheffield Royal Infirmary—Ophth H.S. at rate of £120 Also H.S. and Aural H.S. each at rate of £80
- Southampton, Royal South Hants and Southampton Hosp—H P, Cas O and Res Anaesthetist and H.S. to Ear Nose and Throat Dept, at rate of £150
- South London Hosp for Women Clapham Common, S W—H P and H.S., each at rate of £100
- Stafford Preswood Sanatorium—Jun Asst M O at rate of £300
- Stockport, Sleeping Hill Hosp—Res Asst M O at rate of £200
- Stoke-on-Trent Burslem, Haywood, and Tunstall War Memorial Hosp—Res H.S., at rate of £175
- Stoke-on-Trent, Longton Hosp—H.S., £160
- Stoke-on-Trent, North Staffordshire Royal Infirmary—H.S. for Aural and Ophth Dept, £150
- Sunderland Royal Infirmary—H.S., £120
- Surrey County Council—Jun Asst M O for County Sanatorium at rate of £350
- Surrey County Hosp Redhill—Res Asst M O, at rate of £375
- Sutton and Cheam Hosp—Second Ophth Surgeon Also Physician in Charge of Physio Therapeutic Dept
- Swansea County Borough Mental Hosp—Asst M O £400
- Swansea General and Eye Hosp—H.S., at rate of £150
- Taunton Somerset and Bath Mental Hosp—Res Second Asst M O, £350
- Tilbury Hosp, Essex—H.S. at rate of £140
- Tunbridge Wells Kent and Sussex Hosp—H S to Ear Nose and Throat Dept £150
- Warrington Borough General Hosp—Part time Visiting M O, at rate of £300
- Weir Hosp Grove road Balham S W—Jun Res M O £150
- West London Hosp Hammermill road, W—Jun Asst M O for V D Dept, £350 Also H P and Two H.S.'s each at rate of £100
- Winchester, Royal Hampshire County Hosp—H P, at rate of £125
- Windsor King Edward VII Hosp—Two H.S. s and Cas O each £100
- Worcestershire Mental Hosp Barnsley Hall—Deputy Med Supt £450
- Worship Victoria Hosp—Jun Res £130
- York Bootham Park Mental Hosp—Med Supt £800
- York County Hosp—Second H.S. and Res Anaesthetist £150
- The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Invergordon (Ross) South Caw (Dorset) Whitland (Glamorgan) Newton-le-Willows (Lancs) Lydbrook (Glos) Milborne Port (Somerset) Holborn and St Pancras (London)

Births, Marriages, and Deaths

BIRTHS

- ACRES—On May 9th at the Baptist Mission Bolobo Belgian Congo the wife of Dr Ian Acres of a son
- BEACH—On May 17th at Oxford the wife of Surg Lieut. Comdr W V Beach R N of a daughter
- COVE SMITH—On May 22nd the wife of Dr R Cove Smith of Stanhope-place W of a daughter
- KAY—On May 21st at Mill Hill, the wife of Dr James Kay, F.R.C.S. of a daughter
- McDOWALL—On May 22nd, at Emsworth Hants the wife of Dr Edward Benson McDowall of a son
- OWEN—On May 11th the wife of Mr O Langley Owen F.R.C.S. of Ross on Wye of a daughter
- PEGG—On May 16th the wife of Dr George Peggs of Chesham place W, of a daughter
- STEADMAN—On May 16th at Devonshire place W the wife of Dr Brian St J Steadman of a son
- WASS—On May 17th at Church-crescent N, the wife of Mr S H Wass F.R.C.S. of a son

DEATHS

- MARTIN—On May 21st at Churchill near Bristol Theodore Martin M.R.C.S. in his 82nd year
- MAY—On May 18th at Bath Colonel William Allan May C.B. R.A.M.C. (ret'd), aged 86
- POLAND—On May 22nd at Seal near Sevenoaks John Poland F.R.C.S. Esq

N.B.—A fee of 7s 6d is charged for the insertion of Notices of Births, Marriages and Deaths

NOTES, COMMENTS, AND ABSTRACTS

LEGAL CLINICAL AND COMMERCIAL ASPECTS OF BIRTH CONTROL

An important Bill concerned with contraception and abortion became effective in Iceland in January, 1935. Its provisions are remarkable because they impose upon doctors an actual obligation to give advice on contraception in certain conditions; also because they regard the woman's economic circumstances as forming part of the therapeutic indications for terminating pregnancy. The first sentence of the first section reads as follows:—

If a woman consults a doctor and suffers from a disease the nature of which is such that the doctor would deem it dangerous to the woman to become pregnant or to bear a child it shall be his duty to warn her in this matter and to direct her how to prevent conception. The physician shall be bound to give her the information required, but no one who is not a physician shall be allowed to give such directions. The Minister of Health shall publish, and the Chief Medical Officer shall distribute among physicians, Directions for women how to prevent pregnancy."

Section 9 ends with the following paragraph:—

When estimating how far childbirth may be likely to damage the health of a pregnant woman as mentioned under sub-section 1 hereof it may among other things be taken into consideration whether the woman has already borne many children at short intervals and a short time has passed since her last confinement also whether her domestic conditions are difficult, either on account of a large flock of children, poverty or serious ill health of other members of the family.

CONTRACEPTIVE SUCCESS AND FAILURE

Reports on the data at birth control clinics have been accumulating in the last fifteen years and a valuable precedent as to how they should be presented was set four years ago by Dr. Hannah Stone.¹ The information collected has social and medical aspects and the scientific reports should therefore give consideration to the economic status of the woman as measured by her husband's occupation and earnings to her age and religious affiliation to her previous reproductive history and her previous use of contraception. It is always found that the clinics lose touch with a proportion of patients and the exact number should be stated: the earlier in the clinic's history a patient is seen the greater is the chance of the clinic losing touch. Of the women with whom the clinic maintains touch some discontinue the method, either because it is not needed (in cases of sterilisation, menopause or death of or separation from husband) or because the method is found unacceptable. The number in each of these categories should be given. Finally a proportion of women use the method successfully; and another proportion experience failures—i.e. they have unwanted pregnancies when using the method advised by the clinic—which have been classified in various ways.

A report on 4000 cases by Dr. Ruth Robishaw² of Cleveland, Ohio, covers the six year period 1928-34 and gives much valuable information; but it is not clear on all these points. The reader is left to deduce that, of the patients seen during this period the clinic maintained touch with 2063—just over half the total; as is to be expected the proportion of women seen each year with whom the clinic maintained touch increased steadily from 1928 to 1933. Thus by 1931 it had retained contact with only 10 per cent of the cases seen in 1928; whereas it main-

tained touch with 96 per cent. of those seen in 1933. But particulars of all 4000 women are given by Dr. Robishaw in her report, so it is to be presumed that in 1917 cases the records of the women's experiences stop short when contact with them was lost, and thus do not cover the whole interval which elapsed between the date of their first attending the clinic and the year 1934 when the six year period ended.

In 8014 of the recorded cases the method advised was a combination of a diaphragm pessary and a lactic acid jelly. In the remaining 486 patients, 12 other methods were advised. Of the total of 4000 women 1700 successfully used the method which had been advised. 1363 discarded it because they found it unsatisfactory and 161 gave it up for reasons that had no connexion with its merits or demerits. One hundred and twelve women were pregnant before they began to use the method. Of 357 women who became pregnant after it had been used 331 experienced unwanted pregnancies; only 26 pregnancies appear to have been planned. The smallness of this proportion is remarkable in view of the fact that the average age of the women was between 25 and 30 and of the fact that in this country at least birth control clinics are used largely by women who want to space their children. Of the failures, 41 were unaccountable—i.e., were not attributed to defects in the appliances provided or to omissions of part of the procedure. The unaccountable failure rate of 1 per cent. over a period of about two years accords closely with the findings of previous investigations in America and in this country. Assuming a coitus rate of once a week, the risk of failure at each act works out at 1 in about 4000 provided that the method is properly carried out.

THE COMMERCIAL SIDE

In an account of the birth control industry in America Harrison Reeves³ gives some striking figures. It is said that 5 000 000 sheaths are sold daily and that 275 million dollars a year are spent upon them. But in addition to this 800 000 000 dollars are annually spent on other contraceptive appliances such as jellies, suppositories, caps, rings, and compounded prescriptions. The birth-control industry while not yet comparable in volume to the petroleum industry or to the industry in cosmetics and beauty appliances is one upon which is being increasingly focused the principles of scientific salesmanship. Thus we are told that the use of slot-machines in garages and public lavatories and of placards for advertisement are being discouraged but schemes are favoured for installing vending machines on battleships in army barracks, in police headquarters, and in country clubs.

Successful installations of this sort, says Mr. Reeves, would give class to the business, speed word of mouth advertising and break down one barrier after another. Since the author does not quote the sources from which his computations are drawn, his figures should be accepted with caution but they suggest the desirability of obtaining accurate data in this country with regard to a trade that now has a noteworthy sociological influence.

THE NUTRITIONAL POLICY OF THE LEAGUE OF NATIONS

At the twenty fifth session of the Health Committee of the League of Nations held at Geneva during the last days of April a programme was discussed and approved for the next three years. Consideration was given to the report of the Technical Commission of Nutrition set up in 1932 which held its first session in London in November of that year (see *Lancet* 1932, 2, 1431). This report has it seems created an impression not only in Europe but also overseas, thus the agenda of the Intergovernmental Conference on Rural Hygiene in the Far East includes items

¹ Hannah M. *Marriage Hygiene* Bombay November 1936 (English translation of the Act).

² Stone H. M., and Hart H. *Medical Health and Contraception: A Study of the Social and Medical Data of 2000 Patients*. The social data were published by the New Jersey Birth Control League; the medical data (by Stone) in the *Medical Journal and Record* April 1936 and May 3rd, 1937. Robishaw H. A. (1936) *Iowa J. Obstet. Gynec.* 31, 478.

³ Reeves H. *American Mercury* October 1936.

such as the composition of dietaries, the nutritive value of the principal foods, deficiency diseases and their method of investigation, all of them inspired by the Commission's report. In Chile a study of popular nutrition by Profs. Dragoni and Burnet is now in the hands of the Government. Nutritional problems will also figure prominently in the agenda of the Conference on Rural Hygiene in American Countries and in that of the European Conference on Rural Life, both of which it is presumed will be held during the mandate of the present Health Committee. It was felt at this session that the procedure adopted for the study of nutrition has produced valuable results in a comparatively short space of time and, having thus proved its worth, is not in need of modification at present. The report of the Technical Commission will thus remain the pivot of activity.

LE PLAY SOCIETY—Sir John Russell, F.R.S., of the Rothamsted Institute, Harpenden, is to lead a group of members and friends of this society to Soviet Russia in August. The visit will afford an opportunity for seeing something of what is being done in the application of science to everyday problems in Russia, particularly in regard to farming. The general geographical features of the country, its geology, vegetation and various social experiments will also be studied. This group will leave London on August 6th and will go via the Black Sea to Erivan in Soviet Armenia, returning via Moscow and Leningrad by boat to London. Finnish Lapland is to be visited by another Le Play group, who will stay for a short time on the Arctic coast. For geographers, botanists, and geologists, this presents a particularly interesting area for vacation study. The party will leave London on August 4th. Similar arrangements are being made for visits to Yugoslavia (Old Serbia), where there will be special interests for the geologist and the botanist, to Czechoslovakia, to the Dalmatian coast, and to the Outer Hebrides. Full details of these vacation visits can be had from Miss Margaret Tatton, director of the society, 58, Gordon square, London, W.C.1.

CORRIGENDUM—In the article on the Action of Trypsin on Diphtheria Toxin by Brandwijk and Tasman in our last issue, p. 1228 the reference in line 7 should be to various strains of typhoid bacteria.

Appointments

BROWN, D. G. W. M.Ch. Orth. Liverp. F.R.C.S. Edin. Orthopaedic Surgeon to the Royal Infirmary, Sunderland.
GIBSON, ROBERT M. B. Glasg. Assistant Medical Officer at the Bristol Mental Hospital, Fishponds.
GORDON, W. H. M. B. Glasg. D.O.M.S. Refractionist to the Queen Mary's Hospital for the East End.
HILDYARD, F. P. M. B. Glasg. Assistant Physician to Runwell Hospital for Nervous and Mental Disorders, Wickford, Essex.
HOPKINS, EDITH M. R.C.S. Eng. D.M.R.E. Radiologist in Charge of Diagnostic Work at the Elizabeth Garrett Anderson Hospital.
HOSFORD, JOHN, M.S. Lond., F.R.C.S. Eng. Consulting Surgeon to the Bethlem Royal Hospital, London.
HULBERT, N. G. M. B. Camb. M.R.C.P. Lond. Medical Registrar to the Royal Chest Hospital, London.
JOHNSON, J. F. F. M. B. Manch. Assistant Medical Officer at Woolley Sanatorium, Northumberland.
LEDGERMAN, M. B. Lond. Resident Medical Officer at the Radium Institute, London.
MCCARTHY, RITA, L.R.C.P. Irel. Clinical Assistant to the Ophthalmic Department, Sheffield Royal Hospital.
MILES, J. P. T. M.S. L.R.C.P. Edin. Temporary Assistant School Medical Officer and Assistant Medical Officer of Health for Exeter.
PRICE, MARGARET R. L.R.C.P. Lond. D.C.H. First Assistant in the Children's Department of the Royal Free Hospital, Savoy.
ROBERTSON, M. B. Aberd. F.R.C.S. Edin. D.L.O. Hon. Assistant Surgeon to the Ear, Nose and Throat Department of the Grosvenor General Hospital.
SMITH, C. M. M.D. Glasg. D.P.H. County Medical Officer of Health and Chief School Medical Officer for Northamptonshire.
THOMAS, A. R. B. Chir. Camb. D.M.R.E. Radiologist to the Bethlem Royal Hospital, London.
City Infectious Diseases Hospitals, Liverpool—The following appointments are announced:
HURST, MARY M. M. B. Liverp. Assistant Resident Medical Officer.
DODD, ARTHUR, M. B. Liverp. Assistant Resident Medical Officer and
CONCANNON, A. B. M. B. Liverp. Assistant Resident Medical Officer.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1 Wimpole-street W.
 WEDNESDAY June 2nd
 Surgery 2.30 P.M. Summer meeting at the British Postgraduate Medical School, Hammersmith Hospital, Duane road W.
BIOCHEMICAL SOCIETY
 FRIDAY June 4th—2.30 P.M. (Institute of Physiology, the University, Glasgow) communications and demonstrations.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East S.W.
 TUESDAY, June 1st—5 P.M. Dr. Edwin Bramwell. Clinical Reflections upon Muscles: Movements and the Motor Path. (Last Croonian lecture).
MATERNITY AND CHILD WELFARE CONFERENCE
 TUESDAY, June 1st WEDNESDAY and THURSDAY—English speaking Conference on Maternity and Child Welfare at B.M.A. House Tavistock square W.C.
BRITISH POSTGRADUATE MEDICAL SCHOOL, Duane road W.
 TUESDAY, June 1st—1.30 P.M. Dr. D. Hunter. Occupational Diseases.
 WEDNESDAY—Noon, clinical and pathological conference (medical). 2.30 P.M. Prof. M. Greenwood F.R.S. Experimental Epidemiology 3 P.M. clinical and pathological conference (surgical).
 THURSDAY—2.15 P.M. Dr. Duncan White. Radiological Demonstration 3 P.M. operative obstetrics 3.30 P.M. Mr. A. K. Henry. Demonstrations of the Cadaver of Surgical Exposures.
 FRIDAY—2.30 P.M. Mr. Russell Howard. Diseases of the Breast. 3 P.M. clinical and pathological conference (obstetrics and gynaecology).
 Daily 10 A.M. to 4 P.M. medical clinics surgical clinics and operations obstetrical and gynaecological clinics and operations. Refresher course for general practitioners.

WEST LONDON HOSPITAL POST GRADUATE COLLEGE

Hammersmith W.
 MONDAY, May 31st—10 A.M. Dr. Post. X-ray film demonstration, skin clinic 11 A.M. surgical wards 2 P.M. operations surgical and gynaecological wards medical surgical and gynaecological clinics.
 TUESDAY June 1st—10 A.M. medical wards 11 A.M. surgical wards 2 P.M. operations medical surgical, and throat clinics 4.15 P.M. Dr. B. Coden. Choice of Anaesthesia.
 WEDNESDAY—10 A.M. children's ward and clinic 11 A.M. medical wards 2 P.M. gynaecological operations medical surgical and eye clinics 4.15 P.M. Dr. Redvers Ironside. Subarachnoid Haemorrhage.
 THURSDAY—10 A.M. neurological and gynaecological clinics Noon fracture clinic 2 P.M. operations, medical surgical genito-urinary and eye clinics 4.15 P.M. Mr. Simmonds. Surgical lecture.
 FRIDAY—10 A.M. medical wards skin clinic Noon, lecture on treatment 3 P.M. operations medical surgical and throat clinics 4.15 P.M. Dr. Owen. Artificial feeding in Infants.
 SATURDAY—10 A.M. children's and surgical clinics 11 A.M. medical wards.
 The lectures at 4.15 P.M. are open to all medical practitioners without fee.

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION

1 Wimpole-street W.
 MONDAY May 31st to SUNDAY June 6th—ST. PETER'S HOSPITAL, Henrietta street W.C. all day advanced course in urology—THURSDAY OF WEEKS GENERAL HOSPITAL, Tottenham N. Sat and Sun course in general medicine.

ST. MARY'S HOSPITAL W.

TUESDAY June 1st—5 P.M. (Institute of Pathology and Research) Mr. F. T. Ridley. The Intracranial Pressure HOSPITAL FOR SICK CHILDREN, Great Ormond street W.C.

THURSDAY June 3rd—2 P.M. Dr. E. A. Cockayne. Jaundice 3 P.M. Mr. Charles Donald. Gout in Children.

Out patient clinics daily at 10 A.M. and ward visits at 2 P.M.

LONDON SCHOOL OF DERMATOLOGY, 1 Lisle-street W.C.

MONDAY May 31st—5 P.M. Dr. G. B. Dowling. Occupational Dermatitis.
 TUESDAY June 1st—5 P.M. Dr. R. W. Barber. Eichen Planus.

THURSDAY—5 P.M. Dr. Hugh Gordon. Treatment of Acne.

FRIDAY—5 P.M. Dr. J. E. M. Wigley. Napkin Area Eruptions.

SOUTH WEST LONDON POST GRADUATE ASSOCIATION

St. James' Hospital, Ouseley road S.W.
 WEDNESDAY June 2nd—1 P.M. Dr. C. E. Lakin. Demonstration of Medical Cases.
 MANCHESTER ROYAL INFIRMARY
 FRIDAY June 4th—4 P.M. Dr. P. B. Mumford. Demonstration of Skin Cases.

ADDRESSES AND ORIGINAL ARTICLES

THE TREATMENT OF DIABETES
CLINICAL AND EXPERIMENTAL
OBSERVATIONS WITH NEW INSULINSBy T. IZOD BENNETT, M.D., F.R.C.P. Lond.
PHYSICIAN WITH CHARGE OF OUTPATIENTS, MIDDLESEX
HOSPITAL, LONDONT. M. DAVIE, B.M. Oxon, M.R.C.S. Eng.
CLINICAL ASSISTANT AT THE HOSPITAL;DOUGLAS GAIRDNER, B.M. Oxon
HOUSE PHYSICIAN AT THE HOSPITAL ANDA. MORTON GILL, M.D., M.R.C.P. Lond.
MEDICAL REGISTRAR AT THE HOSPITAL.

(From the Wards and the Diabetes Clinic, Middlesex Hospital)

THE evolution of the modern treatment of diabetes is marked by certain stepping-stones of fundamental importance. These are—

1. *Ladder diets* devised by Dr. George Graham. The introduction of gradually increasing and balanced diets after a period of initial starvation began a new epoch by which the mortality of diabetes was greatly diminished and the general welfare of the diabetic patient notably increased.

2. *Discovery of insulin*—This has enabled us to diminish the mortality of diabetes to a very low level even in cases of great severity; it has also reduced the mortality of diabetic coma which was previously 100 per cent. to a relatively low figure.

3. *Introduction of high-carbohydrate diets*—Several years ago observers in many countries discovered almost simultaneously that in severe cases of diabetes controlled by diet and insulin it often becomes possible to increase the daily ration of carbohydrate with benefit to the patient and without increase in the daily dose of insulin. It was even found that it was often possible to diminish the daily dose of insulin. This advance has been less fundamental than the others and has occasionally had the disadvantage of encouraging patients to eat unwise amounts of carbohydrate. It has however when properly employed brought increased liberty to the diabetic patient.

To these three advances must now be added a fourth in the form of certain new insulin preparations which act more slowly and over a longer period than does insulin in its original form. The parent of these insulins is the protamine insulin invented by Prof. H. C. Hagedorn of Copenhagen and marketed in this country under the name of Retard Insulin.¹ The other new insulin marketed in Great Britain by a group of British chemical firms is known as Protamine Insulin (with Zinc) Suspension;² its composition may broadly be described as being Hagedorn's protamine insulin with minute amounts of zinc added to it.

A further new insulin has been widely used in North America under the name of "crystalline insulin"; this product is not at present on the British market but our observations include some made with an insulin of this type and provisionally called Zinc Crystalline Protamine Insulin.³ This composition may be described as being ordinary insulin crystallised by zinc and subsequently combined with protamine.

BASIC PRINCIPLES OF TREATMENT

Discussion of the value, and of certain disadvantages of these new insulins can be clarified by a brief recapitulation of the basic therapeutic principles which have governed the majority of physicians when treating diabetes during the last twenty-five years. At first, when the immense significance of the 'starvation' treatment and ladder diets was appreciated it was believed that if a patient with diabetes was kept constantly sugar free the pancreas was placed in a condition of rest, deterioration was checked and the possibility of regeneration secured. With the introduction of insulin attention became concentrated upon the sugar in the blood but the principle of pancreatic rest still governed treatment; it was often laid down that the optimum dose of insulin was that which would prevent hyperglycaemia at any time in the twenty-four hours. The astounding success of insulin gradually brought with it the conviction that this substance had a wider effect than mere chemical control of the sugar circulating in the blood; patients properly treated with insulin do not only cease to lose weight, and regain strength, they exhibit far wider physiological restoration as may be exemplified by the disappearance of prolonged amenorrhoea in women and the reappearance of virility in men. In fact, it becomes clear that successful insulin therapy is a true replacement therapy akin to the treatment of Addison's disease with adrenal cortical extract. It might almost be said to-day that the correct dose of insulin in any patient with diabetes is the maximum dose that can be administered without the production of unpleasant symptoms.

But recent years have taught us that certain unpleasant symptoms resulting from hypoglycaemia form a very important factor in the lives of many patients suffering from severe diabetes. We can recall the case of a medical man who set out on his morning round in a new car and remembered nothing until he awoke in a London hospital with a badly cut head to receive the news that his car had been found smashed to pieces in a quiet suburban road. We were recently asked to report on a bank clerk who had at one time attended the diabetes clinic at the Middlesex Hospital and who had just achieved notoriety by entering the manager's office in the middle of the morning where he smashed the furniture and assaulted his superior. Another bank clerk who had been perfectly controlled with insulin in 1926 consulted us again in 1932 because he found that on several days a week he tended at about 11 A.M. to throw the ledgers all over the office and then retire to sulk in the W.C. for half an hour. In children a condition of pronounced nervousness, irritability and fear is often apparent at times when the effect of a previous dose of insulin is at its maximum and almost any diabetic patient who has been on insulin for a long time will, if his confidence be secured and his very proper desire to avoid crumbling be subdued, tell his medical adviser of the dread he has of these mild hypoglycaemic attacks. The new insulins with their slower and more prolonged action hold promise of making it easier to reproduce the continuous secretion of natural insulin which we believe to be the physiological condition and to diminish this risk of frequent hypoglycaemia mild or severe which is so much dreaded by the diabetic patient.

Comparison with Ordinary Insulin

Table I sets out briefly the varieties and times of action of the insulins at present available in Great

¹ Leo made by Nordisk Monin Laboratorium Copenhagen and obtainable from Glaxo, Ltd., London.
² Allen and Hanbury Ltd., Pure Drug Co. Ltd., The British Drug Houses Ltd., Burroughs Wellcome and Co.
³ Made by Organon Laboratories, Oss, Holland.

Britain. From this it is clear that the essential difference between the various insulins lies in their rate of action. All of the new insulins here are, when used, suspensions of ordinary insulin combined with prota-

TABLE I
Types of Insulin

Type of insulin	Synonyms	Commence- ment of action	Maximum effect
Ordinary insulin	—	20-40 min	3 hrs
Insulin retard	Protamine insulin Hagedorn's insulin	1-3 hrs	6-8 hrs
Zinc insulin	Protamine insulin (with zinc) suspension	9-11 hrs	15-20 hrs
Zinc crystalline pro- tamine insulin	Protamine insulin Organon	8-12 hrs	12-20 hrs

mine, the zinc insulins containing zinc in addition. All these insulins act much more slowly than ordinary insulin, and it is believed that this is due to the fact that they remain for a long time in the subcutaneous tissues, where they are broken up and slowly absorbed into the blood stream as ordinary insulin. The zinc products are far more slowly absorbed than the pure protamine insulin. Whether there is any further distinction between the action of the English zinc protamine insulins and the Dutch crystalline protamine insulin we are not yet in a position to say with certitude. Table II sets out briefly the advantages and disadvantages of the different products. In this table it has been necessary to place all the zinc insulins together, though later observations may make it necessary to separate them as regards their effects.

TABLE II
Advantages and Disadvantages of Different Types

Type of insulin	Advantages	Disadvantages
Ordinary insulin	Constant in effect in valuable in coma available in many strengths	Transient effect, multiple doses often needed, liable to produce frequent brief hypoglycemia
Insulin retard	More prolonged effect, painless on injection controls early morning hyperglycemia, never more than two doses required daily	Effect somewhat erratic, occasional severe hypoglycemic effects bulky to administer in large doses occasional difficulty in controlling glycosuria before lunch
Zinc insulin and crystalline protamine insulin	Still more prolonged effect will often control even a severe case with one injection daily	Effect somewhat erratic may produce unexpected and very prolonged hypoglycemia bulky to administer in large doses

It remains to be said that of the new insulins, insulin retard is supplied in boxes containing five bottles of the insulin and one bottle of buffer solution, a small amount of the latter having to be added to each bottle of the insulin before it is used, the addition of the buffer throws down a precipitate and until this is done the product acts exactly as ordinary insulin. A buffer solution is also supplied with crystalline protamine insulin, but in this case the buffer is attached to each bottle of insulin in a separate chamber from which it can be mixed with the insulin before the bottle comes into use. This has the advantage of obviating an essential but not

altogether trivial measurement by the patient. The English protamine insulin (with zinc) suspension is supplied mixed as a suspension which it is claimed, remains potent for six months. Each bottle is dated and it remains to be seen whether the claim of the manufacturers that their product remains stable for so long a period is justified.

HAGEDORN'S PROTAMINE INSULIN (INSULIN RETARD)

In a previous communication two of us (Bennett and Gill 1936) reported the excellent effects obtained by means of protamine insulin in the treatment of severe diabetes in children. Further experience enables us to confirm all that was said in that paper, the children are more easily kept sugar free, often only require one daily dose of insulin, rejoice in the painlessness of the injections, and are observed to be in better health and less subject to attacks of mild hypoglycemia. We have seen no ill effects from the use of this product except that one of these children was brought into hospital in hypoglycemic coma as the result of having accidentally given his injection direct into a vein. The administration of intravenous saline with glucose quickly restored him and he was in his usual health within a few hours. It is to be

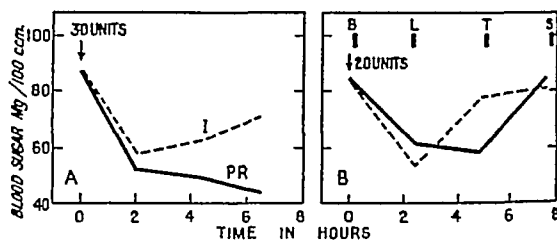


FIG 1—Comparison between ordinary insulin and protamine (retard) insulin in a normal man. In the fasting man the curves show rapid recovery from effect of ordinary insulin but protamine (retard) insulin still acting 6 hours after the injection and producing hypoglycemic attack. On a fixed diet the curves show the effect of ordinary insulin buffered by lunch but protamine insulin continues to act strongly until its action is buffered by tea.

noted that all the new products, if administered intravenously, act with the same speed and in the same degree as a corresponding dose of ordinary insulin. An attack of hypoglycemia arising in this manner will therefore be exactly similar to one arising from the result of such an accident when ordinary insulin is used. Severe hypoglycemia following the subcutaneous administration of one of the new insulins may, however, be more serious than the hypoglycemia of ordinary insulin. We have not met with such an event with protamine insulin but further reference will be made to the subject when discussing the zinc insulins.

Fig 1 illustrates the effect of protamine insulin on the blood sugar. It shows the curves of blood sugar in a normal man, in one fasting, in the other on a fixed diet, after an injection of this substance.

This effect is seen in the fasting subject after the injection of 30 units and it will be noted that at the end of a few hours the effect of the ordinary insulin has quite passed off whilst the protamine insulin is acting more and more strongly at the end of six hours. Sweating, giddiness, and general mental disturbance proclaimed the advent of pronounced hypoglycemia and glucose had to be rapidly administered to the patient, the blood sugar having now fallen to 45 mg per 100 ccm. The curves with a fixed diet show the comparative effect of the two insulins given before a series of small spaced meals. Two hours after breakfast the ordinary insulin has produced the greater effect but lunch soon counteracts this, whereas

the protamine insulin is only reaching its maximum at five hours after its first administration.

We have now been using retard insulin for many months, both for children and for serious cases of diabetes in adults. In a certain number of cases we have been able to establish stability with a single daily injection given before breakfast, but in the majority it has been necessary to give a dose at night as well, and as the effect of this second dose has almost entirely ceased by breakfast next morning when the

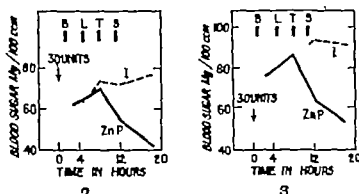


FIG. 2.—Comparison between ordinary insulin and protamine insulin (with zinc) suspension, the latter acting powerfully 18 hours after injection. (Normal man on a fixed diet.)

FIG. 3.—Comparison between ordinary insulin and zinc protamine crystalline insulin acting strongly 18 hours after injection. (Normal man on a fixed diet.)

morning dose has not yet begun to act it is not unusual to observe a transient glycosuria for one or two hours after breakfast. For this reason certain observers have advocated the addition of a little ordinary insulin to the morning dose, but we feel that any possible advantage of this procedure is probably outweighed by the danger of obliging a patient to employ two different brands of insulin each requiring careful measurement. It must also be noted that some of the chemists responsible for the manufacture of the new insulins stress the importance of great accuracy in the pH of the substances when used, and mixture of two products will tend to upset this. While it is perhaps doubtful whether such extreme exactness is of great importance we have no evidence that any real ill effect follows a transient hyperglycemia which is only present for a very short period after breakfast.

The following illustrative cases may be cited—

CASE 1.—Dose unchanged. Reactions abolished. Female aged 29. Severe diabetes of eleven years duration. Sugar-free on 32 units of ordinary insulin morning and 28 units evening. Frequent and rather severe hypoglycemic reactions. *Result*—Now sugar free on protamine (retard) insulin 32 and 28 units. Only two mild reactions in many weeks.

CASE 2.—Dose reduced to one a day. Male aged 36. Mild diabetes for two years. Sugar free on ordinary insulin 14 and 10 units. No reactions. *Result*—Now sugar free on one daily dose of 26 units protamine (retard) insulin.

CASE 3.—Failure to secure stabilisation. Female aged 39. Severe diabetes for eleven years. Sugar free on 30 units ordinary insulin for each of three main meals. Frequent hypoglycemic attacks. Changed to protamine (retard) insulin 40 units morning 20 units evening. *Result*—Reactions abolished but has frequent glycosuria both morning and afternoon.

CASE 4.—Morning glycosuria abolished. Male aged 37. Severe diabetes ten years. Complicated by pulmonary tuberculosis now quiescent. Constant early morning glycosuria on ordinary insulin 40 and 25 units. *Result*—Now continuously sugar free on protamine (retard) insulin 41 and 30 units. *Comment*—The pulmonary complication made it important to secure complete control

in this case; it is however to be noted that with active pulmonary tuberculosis and with varying and very low tolerance, ordinary insulin with its rapid and constant action, is to be preferred to the slower insulins.

CASE 5.—Constant glycosuria abolished. Total dosage reduced. Male aged 66. Severe diabetes five years. Glycosuria never properly controlled on ordinary insulin 40 and 30 units. Occasional hypoglycemic reactions. *Result*—Now continuously sugar free on protamine (retard) insulin 38 and 20 units. Occasional slight hypoglycemia.

PROTAMINE INSULIN (WITH ZINC) SUSPENSION AND ZINC CRYSTALLINE INSULIN

Both these insulins act more slowly and for a longer period than does protamine insulin (retard). Figs 2 and 3 show the effect of an injection of 30 units of these insulins on the blood-sugar of normal individuals taking four fixed meals. It will be seen that the normal increase in blood-sugar is converted into a sharp decline which begins to be apparent only after eight hours and is approaching its maximum at about eighteen hours after the administration of the insulin. Owing to this extreme delay it is often possible to achieve stability even in severe cases of diabetes by employing a single daily dose of one of these substances. The following are illustrative cases—

CASE 6.—Incipient coma stabilised with a single daily dose. Female aged 18. Severe diabetes, two months duration. Admitted to hospital in incipient coma relieved by massive doses of ordinary insulin. She was placed on a ladder diet and gradually built up to 120 C 100 P 160 F discharged on this diet with 20 units of protamine insulin (with zinc) suspension before breakfast. *Result*—She has remained well and stable for two months.

CASE 7.—Heavy ketosis stabilised with single small evening dose. Female aged 11. Admitted with heavy ketosis and uncontrolled glycosuria. Six weeks history. Controlled with ordinary insulin. Gradually built up on ladder diet with substitution of protamine insulin (with zinc) suspension. After fourteen days in the ward she

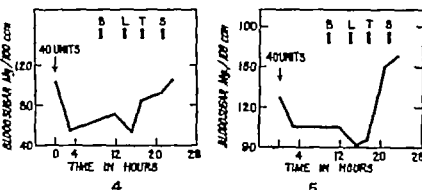


FIG. 4.—Blood sugar observations from Case 1 taken when stability was first achieved.

FIG. 5.—Blood-sugar curves from a case somewhat similar to Case 8. Female aged 53. Zinc protamine crystalline insulin 40 units given at 9 P.M.—i.e. two hours after supper. Only fair control of blood sugar and total daily carbohydrate low (60 g). Distribution of carbohydrate; breakfast 35 per cent.; lunch 35 per cent.; tea 20 per cent.; supper 10 per cent.

was sugar free and symptomless on a single evening (9 P.M.) injection of 40 units (Fig 4). During the next week this dose was reduced to 32 units and the patient was discharged from ward. *Result*—Now attending out patients and dose is only 16 units. There have been three slight reactions at about 2 A.M.

But against apparently brilliant successes of this kind must be set a number where this is qualified by the necessity to employ more than one type of insulin.

CASE 8.—Stability on two doses of ordinary insulin failure to control with single dose of zinc insulin. Female aged 65. Severe diabetes of two years duration. Sugar free on 18 units of ordinary insulin night and morning

but subject to occasional severe hypoglycæmic attacks when taking much exercise in the mornings. Very desirous to get on to a single dose of insulin. Three weeks' careful treatment in hospital failed to achieve this but at the present time she is well on 36 units of protamine insulin (with zinc) suspension, given every evening at 8.30 P.M., on this she usually shows glycosuria between 10 A.M. and 1 P.M., which can be controlled by giving 6-10 units of ordinary insulin before breakfast. It is felt that the present position is probably preferable to the previous situation, because this patient is not very intelligent and was irregular in her meals and times of administration of ordinary insulin, there is now much less risk of hypoglycæmia and she has greater liberty in that the exact hour of the evening dose does not very much matter, it remains to be seen whether it is necessary for her to take the morning dose of insulin.

Risks of Hypoglycæmia

The risks of severe hypoglycæmia owing to cumulative or to delayed effect must be borne carefully in mind. When a patient on one of the very slow insulins develops hypoglycæmia, it is apt to appear only when the blood sugar has fallen to a very low level. With ordinary insulin a hypoglycæmic attack is the result of a sharp and rapid fall in the blood sugar level, with zinc insulins the advent of hypoglycæmia is so gradual that it sometimes produces symptoms only when the blood sugar has reached a dangerously low level. Further, it must be noted that hypoglycæmia with ordinary insulin tends to be a transient phenomenon from which the patient often emerges without special treatment, and is susceptible to rapid correction by an injection of adrenaline or the administration of a little glucose. With the zinc insulins, on the other hand, hypoglycæmia will tend to be prolonged and treatment may have to be continued over several hours before safety is re-established.

CASE 9—Severe hypoglycæmia threatening life. Female aged 23. Severe diabetes for three years, stabilised and well on ordinary insulin 25 units morning, 10 units evening. Twelve months ago married, neglected her diet and omitted evening insulin. Recently admitted to the Middlesex Hospital, pregnant three months, incipient coma and uncontrolled diabetes. She became practically stable with occasional positive urine tests on 1750 calories, including 100 C, with 66 units zinc crystalline insulin at 6 A.M. One slight hypoglycæmic attack at 11 A.M. (blood sugar 68) on 70 units. On 66 units there were no signs of hypoglycæmia until she had been taking this dose for seven days, on the seventh day she was given her 66 units at 6 A.M. and at her usual meals, twenty-two hours later, at 3.30 A.M., a night nurse reported that she was noisy and incoherent and disturbing the ward. The night nurse erroneously interpreted this as hysteria, and half an hour later she was quiet because of deep coma and was found to be cold and almost pulseless. Adrenaline was administered without effect and 10 grammes of glucose given intravenously, she became partly conscious and vomited, glucose was administered by mouth, but vomiting continued and the patient was dangerously ill until 5.30 A.M., when recovery gradually became complete. The blood sugar at 3.30 A.M. was 38 mg per 100 c.c.

The patient is now being treated with protamine insulin (retard), and is approaching stability on 16 units in the morning and 22 in the evening.

This case illustrates the potential dangers of the new insulins. We are strongly of opinion that great caution must be observed in their use when a dose exceeding about 30 units is required. When protamine insulin (with zinc) suspension was first put on the market one of us (T. I. B.) wrote a warning in the medical press, and subsequent experience convinces us that this warning was more than justified. A death from hypoglycæmia after the administration of a large dose of one of these insulins has occurred in

Great Britain, and although we have no personal experience of such a catastrophe the case recorded above was one causing great anxiety for some hours.

CASE 10—Severe diabetes controlled with single injection of 88 units of zinc insulin, treatment changed on account of danger. Female aged 17. Severe diabetes of 18 months' duration. On ordinary insulin 32 and 28 units showed variable glycosuria with frequent hypoglycæmic reactions. On protamine insulin (retard), 40 and 32 units, reactions were abolished but glycosuria constant. Next on 38 units of ordinary insulin in the morning and 36 of protamine insulin (retard) in the evening she was sugar free but still had rather frequent hypoglycæmic attacks. She dreaded multiple injections. She was re-stabilised on zinc protamine crystalline insulin, 88 units before breakfast. Only very small hypoglycæmic reactions occurred, usually in early morning before breakfast. Blood sugar estimations showed constant hyperglycæmia without glycosuria (Fig. 6). Single doses were abandoned on account of potential danger.

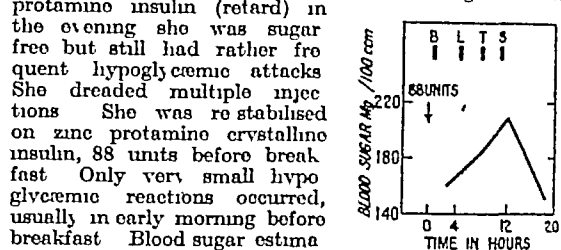


FIG. 6.—Severe diabetic with high renal threshold sugar free on one injection of 88 units of zinc protamine crystalline insulin.

Result.—Now sugar free and without hypoglycæmic attacks on 32 units of ordinary insulin before breakfast and 60 units of zinc protamine crystalline insulin before tea. This patient is being kept under very careful observation.

Psychology of the Patient and its Bearing on Treatment

Patients with diabetes mellitus fall into two broad but important classes—young diabetics in whom diabetes is the predominant feature of the situation and is severe, and middle-aged or elderly diabetics in whom the disease is complicated by the presence of arterial degeneration and in whom this latter feature is usually the dominating factor, the diabetes being easy to control. In both these classes psychology plays an important part in that the patient is the victim of an incurable disease that, can almost invariably be kept under control, provided that the patient has the intelligence and knowledge necessary for proper collaboration with his medical attendant. But the knowledge that the disease is incurable and that the patient is obliged to exercise perpetual discretion concerning diet is a heavy handicap, and until discipline has merged into habit this must have a depressing effect. A further psychological burden is imposed upon the diabetic patient by the well meant advice which he or she is constantly receiving from friends, who advocate changes of diet, patent foods, changes of medical attendant, and other things which are so easily urged upon someone other than one's self.

The introduction of a series of new insulins may prove a curse to a large number of diabetics who are at present being successfully treated without the use of these innovations. It must be clearly stated that the diabetic patient who has for some time been maintained in excellent health, without alarming variations in weight, and without much glycosuria or attacks of hypoglycæmia, should be advised to keep to his present treatment. The new insulins offer him no great advantage. When, on the other hand, such a patient finds the administration of multiple doses a serious burden, or when he has been subject to frequent hypoglycæmic attacks, the substitution of one of the slower insulins may prove to be a very real boon.

It must not be assumed, however, that it is a simple matter to change a patient over to one of the slower

insulin In milder cases where the total daily dose of ordinary insulin does not exceed 30 or 40 units it can often be achieved in the out-patients department without great difficulty but when the case is more severe the change must be carried out in a hospital or nursing home with most careful control of the diet and daily observations of the urine. When stabilisation is accomplished or approaching great care should be taken to see that the patient is taking plenty of exercise and a few estimations of the blood sugar specimens being secured at an appropriate time after the administration of the insulin should be made in order to be sure that masked hypoglycemia is not present.

In cases where an evening dose of zinc insulin renders the patient sugar free except for a brief period after breakfast it is often easy to control the morning specimen by a small injection of ordinary insulin but we are not satisfied that such a patient has derived real benefit because he is still receiving two injections daily and carries the risks inherent in the employment of two very different substances.

A survey of recent publications dealing with the treatment of diabetes reveals the interesting fact that many American observers have joined their British colleagues in believing that the successful treatment of diabetes must be simple. Complicated diets and the employment of more than one type of insulin in any patient are the antithesis of simplicity and we remain convinced that the requirements of the diabetic patient cannot be met by a complex treatment.

Conclusions

(1) Extensive clinical trial has now been made with protamine insulin (retard) and protamine insulin (with zinc) suspension. Experimental trial has been made with zinc crystalline insulin.

(2) These observations confirm the slower action of the new insulins as compared with ordinary insulin the maximum effect of protamine insulin being usually 6 hours after administration whilst that of

the zinc preparations including the crystalline product is often about 18 hours.

(3) The effect of the zinc insulins wears off completely in 18-24 hours. We are unable to confirm the suggestion that cumulative effects may occur—i.e. the prolongation of action beyond 24 hours (Fig 7).

(4) It is often possible to reduce the number of daily injections of insulin from multiple doses to a single dose when these slower products are employed.

(5) The protracted action of the new products carries with it the danger of prolonged hypoglycemia unless great care is observed.

(6) It is unwise in the present state of knowledge to substitute one of the new insulins for ordinary insulin unless there is valid objection to multiple doses

or frequent tendency to hypoglycemic attacks owing to the too rapid effect of ordinary insulin.

(7) The new insulins owing to variation in the rate of absorption or other causes tend to vary in their effects from day to day, and even if this variation is not of cardinal importance it is liable to have a bad psychological effect on the patient.

(8) At the present time in cases where it is desirable to employ one of the slower insulins protamine insulin (retard) is probably the safest preparation available.

Our thanks are due to our colleagues in the Courtauld Institute of Biochemistry for blood-sugar analyses here recorded. We also wish to thank the manufacturers of Leo Insulin and the proprietors of the Organon Laboratories for supplying us with insulin for experimental purposes. We would further acknowledge the constant help we have received in our work from Miss V. Scott Carmichael, the lady dietitian to the Middlesex Hospital.

BIBLIOGRAPHY

- Altshuler S S and Leiser R. (1936) *J Amer med Ass.* 107 1528.
Bennett, T. I., and Gill, A. M. (1936) *Lancet* 2 416.
Himsworth, H. M. (1937) *Brit med J* 1, 847.
Jacobs, H. G. (1937) *N Y St J Med.* 37 1.
Lawrence, R. D., and Archer, N. (1937) *Brit med J* 1 487.
Robinson, I. M., Fowler, A. F., and Coccooran, A. O. (1937) *Canad med Ass J* 36 111.
Richardson, R., and Bowie, M. A. (1936) *Amer J med Sci* 192, 764.
Wilder R M (1937) *Arch intern Med* 59 329.

PERICARDIAL RESECTION FOR CONSTRICTIVE PERICARDITIS

REPORT OF A CASE APPARENTLY CURED

By ROBIN PILCHER, M.S. Lond. F.R.C.S. Eng.
FIRST ASSISTANT IN THE SURGICAL UNIT UNIVERSITY COLLEGE HOSPITAL

(WITH ILLUSTRATIONS ON PLATE)

Churchill in 1920 collected 36 cases of pericardial resection for constrictive pericarditis, and added one of his own. More recently (1936) he has published 9 others. Paul White (1935) published a full account of the disease in his St. Cyres lecture, giving clinical details of some of the cases operated on by Churchill. Most of Churchill's collected cases came from Gormany notably those reported by Volhard, Schmieden and Fischer. In 18 of the 36 the result was excellent, in 4 there was transitory improvement, in 2 there was no improvement, and in 7 the operation was fatal. In the remaining 5 the operation was not completed. Among Churchill's own 10 cases there were 6 cures and 1 death the remaining 3 showing marked improvement. In the discussion on Churchill's later paper Blalock reported 8 operations with 3 cures, 2 improvements and 3 deaths. Other surgeons in America have reported single cases some successful some not. The only case reported in this country which I have found is that of Roberts and Wilson (1936). The absence of others suggests that either the disease is not being diagnosed or the value of surgery is not recognized. The results that have been published show that about half the patients are cured. This is at least encouraging in view of the severity of the disease and the magnitude of the operation.

The following is an account of a case in which, as in others on record diagnosis and treatment were long delayed. That operation should have succeeded completely some seven years after the onset of ascites seems to show that the very long period during which its activity was severely restricted had left the heart undamaged.

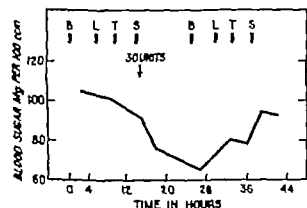


FIG. 7.—Repeated blood sugar observations on a normal man on a fixed diet before and after injection of 30 units of zinc protamine crystalline insulin showing return of blood sugar to its pre-injection level in about 24 hours.

suggestion that cumulative effects may occur—i.e. the prolongation of action beyond 24 hours (Fig 7).

(4) It is often possible to reduce the number of daily injections of insulin from multiple doses to a single dose when these slower products are employed.

(5) The protracted action of the new products carries with it the danger of prolonged hypoglycemia unless great care is observed.

(6) It is unwise in the present state of knowledge to substitute one of the new insulins for ordinary insulin unless there is valid objection to multiple doses

HISTORY OF ILLNESS

The patient, a female, was first admitted to University College Hospital in September, 1929. She was then aged 13 and gave a history of progressive enlargement of the abdomen for three months. There was no preceding illness and no other symptoms except slight discomfort from the swelling. She had had measles at the age of 8 and whooping cough at the age of 6, neither illness being attended by any complications. She had never had rheumatic fever or chorea; there was no family history of tuberculosis.

At the time of her first admission she was a normally developed, well nourished girl, 7 st in weight. The abdomen was distended with fluid, the girth 2 in above the umbilicus being 34.5 in. The liver was enlarged to three fingers-width below the costal margin, its surface being smooth. The spleen could not be felt. Distended veins were noted in the flanks and axillæ. Nothing abnormal was found on clinical examination of the heart. Percussion note was impaired and breath sounds weak at both bases. There was no oedema of the legs or face. The blood count was normal and the Wassermann reaction negative. The radiologist reported that both sides of the diaphragm were high, appearing to compress the heart, and there were increased shadows through both lung fields. Abdominal paracentesis yielded 10 pints of clear brown fluid which contained leucocytes, lymphocytes, and endothelial cells and was sterile on culture. A guinea pig was inoculated with the fluid and six weeks later showed no evidence of tuberculosis. Paracentesis was repeated after four weeks, 8 pints being withdrawn. During her stay in hospital of 107 days the temperature varied from 97° to 99° F, the average being subnormal. The pulse rate at first varied from 90 to 100, but later fell to 80 to 90. The blood pressure varied between 100 and 120 (systolic). The daily output of urine varied from 16 to 56 oz, but was seldom more than 30 oz. No diuretics were given. Blood and albumin were found on admission, but subsequently disappeared. The blood-urea was 14 mg per 100 c.c.m. The diagnosis made at this time was cirrhosis of the liver, and at the time of her discharge the patient was much relieved.

The subsequent history of the patient is one of repeated admission to hospital until September, 1935, when the diagnosis of constrictive pericarditis was made by Dr L. P. E. Laurent. Some idea of her disability may be gained from the following facts. During six years she had been admitted to hospital thirty times, spending in all nearly three years there. She has been tapped forty-two times, a total of 402 pints of fluid having been withdrawn. The maximum girth attained was 40 in. The following observations are extracts from the notes made during her various periods in hospital.

In May, 1929 the tip of the spleen was palpable and remained so, no progressive enlargement was observed.

In October, 1930, the legs began to swell. Subsequently there was a variable amount of oedema sometimes so much that the knees could hardly be flexed.

In January, 1932, there was said to be no pulsation in the cervical veins. Previous observations on this point are not recorded.

In June, 1933 omentopexy was performed. At operation the liver edge was felt to be smooth and there was some thickening of the root of the mesentery. A small umbilical hernia was present at this time.

In December, 1933 the swelling of the legs was less troublesome, but repeated abdominal paracentesis was still necessary.

In November, 1934, venous pulsation was observed in the neck to 7 cm. above the manubrium.

In January, 1935 the umbilical hernia was repaired. The site of the omentopexy was examined and the omentum was found to be atrophic, the adhesions consisting of a few strands only about $\frac{1}{2}$ in in diameter. During this admission the urine output was recorded over a long period. A

tendency to diminish had been noted on previous admissions. During 98 days the lowest daily output recorded was 3 oz, the highest 28 oz. Urea, 6 grammes three times a day, made no appreciable difference.

In September, 1935, the patient complained that in addition to her previous symptoms her eyelids were puffy in the morning. X-ray examination of the chest was repeated and the radiologist reported as follows: "Diaphragmatic movements free, diaphragm high on both sides, costophrenic angles clear. Increase in transverse diameter of heart, perhaps due to high diaphragm. Right supracardiac shadow increased. Normal pulsation. Some increase in vascular markings in lung fields. Large calcified plaque on left side near left border of cardiac shadow, 'calcification in pericardium' (Fig I on Plate). Subsequently it was shown in oblique radiograms that the calcification surrounded the heart in the form of a ring (Fig II on Plate). An electrocardiogram showed inversion of T wave in lead 3 but was otherwise normal. The diagnosis of constrictive pericarditis having been made operation was advised, but was postponed on account of respiratory infection at the suggestion of Dr J. W. McNee, under whose care the patient then was.

At the time of the patient's transfer to the Surgical Unit the following observations were made:

She was a well developed healthy looking girl aged 20, 5 ft 1 in. in height, and 9 st 1 lb in weight. The maximum circumference of the abdomen was 30½ in, this and the weight being measured shortly after paracentesis. There was no oedema of the face, legs, or sacrum, but the abdomen was distended and contained free fluid. The liver was palpable three fingers-width below the costal margin. It was smooth and did not pulsate. There was no recurrence of umbilical hernia. No apex beat was palpable, but there was systolic retraction of the precordium, with a sharp diastolic recoil. The left limit of cardiac dullness was 7.5 cm from the midline in the fifth space, the right limit was in the midline. The heart sounds were normal and no adventitious sounds were heard. There was distension and pulsation of the veins of the neck to the level of the angle of the mandible when the patient was sitting upright in bed. The pulse was regular in rate, its volume diminished on inspiration. The pulse rate varied from 80 to 95. Since the first admission the rate had always been a little above normal. The daily output of urine was still low.

OPERATION

Pericardial resection was performed on Jan 7th, 1936.

Anæsthetic, intratracheal nitrous oxide oxygen and ether. Incision T shaped (see Fig III). The sternum was divided transversely at the second intercostal space and the lower part was split longitudinally, the xiphisternum being excised. The second intercostal space was opened on either side of the sternum as far as the internal mammary vessels. The two sides of the sternum were retracted and a few adhesions between the pericardium and the chest wall were divided. The pleuræ were stripped from the pericardium without much difficulty, the left being opened by a small tear which was sutured forthwith. The surface of the pericardium was white and glistening except where adhesions to the pleura and chest wall had been divided. The pericardium appeared thick and inelastic and many calcified plaques were palpable, the largest being round the base of the heart.

The pericardium was opened anteriorly and a plane of cleavage between the visceral and parietal layers was easily found. Stripping in this plane was carried over the left border of the heart and then to the right, then up to the base, and finally round the apex on to the posterior surface. As soon as the pericardium was widely opened the heart began to fill better and bulged through the opening. The constricting effect of the pericardium was shown by a few fibrous bands left after the main stripping. These

made deep furrows in the bulging heart which expanded still further after their removal. At the base of the heart there was a dense ring of calcified material closely adherent to the auricles. On the right side this ring was severed and a segment about 1 cm square was excised. On the left side the pericardium was stripped to a higher level and another segment of the calcified ring about 2.5×1 cm was excised piecemeal. Access to the base of the heart was a little difficult and was obtained by traction on the reflected flap of pericardium which was not cut away until the stripping at the base had been carried as far as seemed safe. The greater part of the calcified ring was left but two complete gaps were made in it one on each side. The inferior caval opening was next exposed and all adhesions round it divided. A sickle-shaped band running backwards from the front of the heart to the diaphragm appeared to pull the caval opening forward. This was divided and partly excised. There was calcification round the orifice apparently in the wall of the vein itself and it was thought unwise to attempt its removal. Stripping was next continued round the apex and posterior surface of the heart until the ventricles were quite free. Two strong bands fixed the apex to the diaphragm. On the posterior aspect could be felt the continuation of the calcified ring in which two gaps had been made anteriorly. Only the anterior part of the pericardium was actually excised.

At no time did the procedure appear to embarrass the heart even when strong downward traction was made to obtain access to the base. The pericardium was washed out with saline and the wound closed with drainage at the lower end and the two halves of the sternum being held together with encircling sutures of catgut passing through the intercostal spaces. The operation lasted $2\frac{1}{2}$ hours, and at the end the pulse was 108 regular and of good volume.

The largest piece of excised pericardium is shown in Fig. IV. It was in places as much as 5 mm thick. Microscopic examination showed fibrosis and calcification, but no evidence of tuberculosis.

POST-OPERATIVE COURSE

The patient recovered rapidly from the operation. The tube was removed after 24 hours. The wound was painful for several days pain being aggravated by movements of the divided sternum. A week after operation there was observed a strong diffuse systolic impulse in the precordium the divided sternum allowing more movement than normal. No spontaneous diuresis occurred and the distension of the abdomen remained unchanged. For six weeks the daily output of urine only once exceeded 20 oz. On Jan. 23rd 1936 para-centesis was performed 17 pints being withdrawn. This was repeated on Feb. 4th 0½ pints being withdrawn. On Feb. 10th in view of the continued low urinary excretion 6 grains of Theocin was given and this dose was repeated on three succeeding days. There followed a marked increase in excretion. Administration of theocin was therefore repeated and continued until nine weekly courses had been given.

Para-centesis was performed for the last time on March 31st, 2 pints only being withdrawn. The girl was now 33½ in. A light rubber belt was fitted and the patient was discharged on April 17th 1936 since when she has remained well and able to work.

Her girl remains fairly constant being 32½ in. on March 1st 1937. Her weight at this time was 9 st. As Fig. III shows there is redundancy of the skin of the abdomen and irregularity due to the scars of the previous operations. At the present time a year after operation there has been no recurrence of abdominal distension or oedema of the feet. The manubrium and body of the sternum have not united being separated by a gap of about 1 cm. Free movement occurs at this point with respiration and with the heart beat. The two halves of the sternum are also apparently ununited and are slightly depressed in the midline. The precordium moves with the heart beat as if it were floating on the heart the upper

part coming forward in diastole the lower in systole. A feeble venous pulsation is visible in the neck to 2 cm above the manubrium when the patient is sitting upright but the veins are not visibly distended. The blood pressure is 140 systolic, 60 diastolic. There are many previous observations on the blood pressure but it is doubtful whether they are reliable. The highest pressure recorded before operation was 128 the average being about 110.

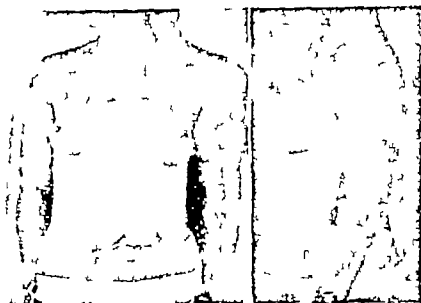


FIG. III.—Patient after operation showing scar of the incision for pericardial resection.

Further X ray examinations have been made since operation. On Feb. 26th 1936 there was little change, except that the breach in the ring of calcification was visible. The diaphragm was still elevated. On Sept. 10th the diaphragm was one space lower on each side the heart shadow being correspondingly increased in vertical diameter and slightly diminished in transverse diameter (Fig. V on Plate). On Feb. 1st 1937 no further change was apparent, and there has been no visible increase in the calcification.

COMMENTARY

In spite of the long period during which severe symptoms were present in this case operation has given the patient complete relief. It has been thought that in long standing cases the heart might suffer from the extra strain suddenly thrown on it by increased filling in diastole following removal of the pericardial constriction. No evidence of this has appeared in any case.

With regard to operative exposure of the heart there is a difference of opinion as to the best approach. Churchill and Schmieden (1926) both recommend resection of anterior ends of ribs, costal cartilages, and part of the sternum on the left side. The sternum splitting method has been little used and the American surgeons are disposed to reject it as apt to cause shock. Beck and Griswold (1930) from an experimental study of constrictive pericarditis in dogs concluded that exposure and liberation of the inferior caval opening is very important and in a case which they reported expressed dissatisfaction with the left-sided exposure. Should there be extensive extrapericardial adhesions a rib resection over the heart might be of value as in the Brauer operation but for actual exposure of the heart the sternum splitting method seems more satisfactory. A possible objection to this method is suggested by the depression of the sternum that has recently developed in my case. In the discussion on Beck and Griswold a paper Alexander reported two cases in which depression of the sternum following injury was associated with severe pain and dyspnoea which he attributed

to pressure on the heart. Both were relieved by operation, in one the sternum being elevated, in the other partly excised.

The removal of the constricting pericardium presented no great difficulty except at the base of the heart and round the inferior caval opening, where there was calcification. As recommended by Schmieden

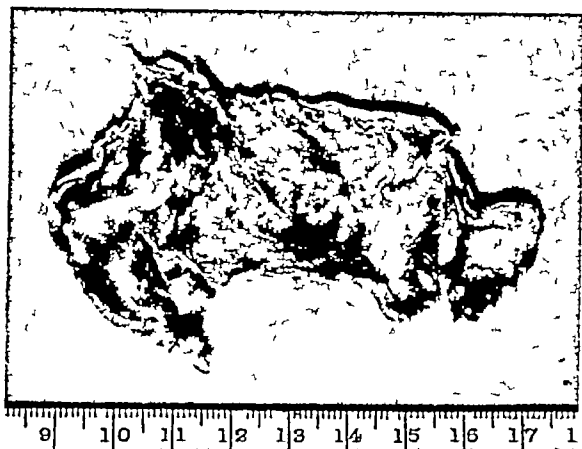


FIG IV—Largest piece of pericardium excised at operation (cm scale)

the left ventricle was cleared first. He states that liberation of the right before the left may result in a sudden overburdening of the former, and he attributed one operative death in his series to this accident. Some disappointment was felt at the failure to deal with the calcified plaques round the base of the heart and the inferior caval opening, but the danger of tearing the heart seemed too great if more were attempted. It was clear, moreover, that liberation of the ventricles had already increased the filling of the heart and it was therefore possible that in spite of the calcification there was no serious constriction of the venous inlets. It must always be difficult to decide how much liberation of the heart is necessary to give relief. Lillenthal (1930) reported a case in which he was unable to strip the pericardium and did little more than make two incisions into it, one of which entered an auricle. In spite of this limited procedure the patient was relieved.

After operation further disappointment was felt at the persistence of ascites. There was no spontaneous diuresis such as occurred in the six successful cases reported by Paul White, and it was several weeks before the benefit of the operation was apparent. Schmieden mentions the difficulty that may occur in ridding the patient of the excess of fluid, especially from oedematous lower limbs. Theocin appeared to give the necessary stimulus in this case, and after its administration only one small paracentesis was necessary. Since her discharge from hospital the patient has had no treatment.

The important factor in this case seems to have been the constriction of the ventricles by the thickened pericardium preventing adequate filling of the heart. The band holding the heart down to the diaphragm may have narrowed the inferior caval opening by distortion. The persistence of calcification round the caval opening and the base of the heart does not seem to have detracted from the value of the operation.

REFERENCES

- Alexander J. Discussion of Beck and Griswold.
Beck C S and Griswold R A (1930) *Arch Surg* 21, 1064
(Continued at foot of opposite column)

CYSTS OF THE NASOPALATINE CANAL

By C BOWDLER HENRY, MRCS Eng, L.D.S.
DENTAL SURGEON AND LECTURER IN ORAL SURGERY AT THE
ROYAL DENTAL HOSPITAL, LONDON

(WITH ILLUSTRATIONS ON PLATE)

Synonyms—Median Anterior Maxillary Cyst
Supernumerary Paranasal Sinus

ROUTINE skiagraphic examination of the teeth has brought to light the prevalence of cystic enlargement of epithelial remnants in the nasopalatine canal. For the most part, unless they become infected, these cysts are symptomless, for they cause no local pain and only occasionally become large enough to bulge through the surface of the bone. The aetiology is unknown. They are commonly seen in apparently healthy mouths, and they are distinct from dental cysts originating from the epithelial rests in the periodontal membranes of the incisor teeth, with which in fact they have no connexion.

INCIDENCE

Although these cysts are seldom recorded they are not uncommon. Mayer, who in 1914 first reported one of them, subsequently (1931) dissected 600 cadavers and found an incidence of 1 in 60, and in a skiagraphic study of living adults found 1 in 100. It is probable that the cysts are often seen but not recognised, especially when small. Their main importance lies in the risk of subsequent infection, when they cause both pain and focal toxæmia, or in misdiagnosis resulting in needless extraction of perfectly sound central incisor teeth. When small, they may be overlooked entirely, or may be mistaken for merely large anterior palatine fossæ. Their pathogenic importance—if any—when uncontaminated has not been assessed.

MORBID ANATOMY AND HISTOLOGY

In their simplest form these cysts appear in the skiagram as ovoid or spheroidal cavities in the bone, above and between the apices of the central incisor teeth, which are often overlapped by the shadow (Figs I and II). Commonly, extension occurs on either side of the median line so that a characteristic bilobed appearance is produced (Fig III), or sometimes the cyst may be located upon one side only, or two separate cysts may develop side by side. The outline of the bony cavity is always clearly defined. The fibrous wall consists of loose connective tissue lined with epithelium which may be squamous, transitional, or ciliated columnar.

Kronfeld (1933) described an early cyst in the edentulous jaw of an adult cadaver. Sections showed the anterior palatine canal filled with a large mass of stratified epithelium which was solid except for a central part where cystic degeneration had occurred. He also illustrates histological sections of a larger cyst.

Histological sections are illustrated by Stafne, Austin, and Gardner (1936), who suggest that the type of epithelial lining depends upon whether the cyst arises from

(Continued from previous column)

- Blalock A. Discussion of Churchill (1936).
Churchill F D (1920) *Arch Surg* 19 1457
(1936) *Ann Surg* 104 516
Lillenthal H. Discussion of Beck and Griswold.
Roberts J E H, and Wilson A J (1936) *Proc R Soc. Med* 29 219
Schmieden, Victor (1926) *Surg Gynec. Obstet* 43 89
White, P D (1935) *Lancet* 2 539 and 597

the nasal or stomal epithelium. These writers discuss the daughter cysts, first noted by Congdon (1920) containing mucoid material and found in the wall of the larger cyst, and they describe mucous glands. The nasopalatine blood vessels and nerves were also seen within the connective tissue wall.

SIGNS AND SYMPTOMS

When the cyst is large attention may be called to the area by swelling on the palate behind the front teeth, or on the gum high up over the incisor teeth and deep to the attachment of the frenum labii. The protuberance is smooth rounded painless and hard unless there has been absorption of the bone covering when typical springy fluctuation may be elicited. Sometimes the cysts erode through both the palatal and the labial plates of bone and the impulse of palpation may be felt across from labial to palatal. Sometimes the patients detect some slight chronic discharge. In these circumstances examination of the dried surface of the palate with a magnifying mirror and a fine dental probe may reveal the fistula (Fig IV) but the orifices of those which I have seen have been capillary and only traced with difficulty. Growth is slow and patients may be unaware of the swelling until an artificial denture is fitted and causes discomfort or blocks up a fistula so that tension causes neuralgia referred first to the glabella region of the frontal bone and subsequently to the maxilla.

The patient whose radiogram is shown in Fig V was an edentulous female over 60. She had suffered for 10-12 years from frequent and repeated headaches which were ascribed to toxæmia originating in the gall bladder which she refused to have removed. The cycle of symptoms was typical. Without warning she would suffer rapidly increasing pain over the bridge of the nose extending up on the forehead between the supra-orbital sinuses. This would be supplemented two hours later by tenderness and eventual pain in the cyst and subsequently unless discharge occurred there would be slight pyrexia and the malaise of toxic absorption which always induced a painful neurofibrositis of the neck. The patient treated herself by fomenting the premaxillary region and establishing discharge. She refused a radical operation, but having had great relief from evacuation of the contents with a fine (lacrymal) cannula on a syringe and the instillation of acriflavine emulsion she consented to having a window made on the palate side large enough to allow permanent free drainage and permit irrigation with a dental water syringe. All her local and general symptoms disappeared. Bacteriological examination of the evacuated contents of the cyst showed a purulent specimen containing streptococci and diphtheroid bacilli. Culture grew *Streptococcus viridans* and a few diphtheroid bacilli ("L. Whitby").

OPERATIVE TREATMENT

The simplest treatment of the larger cysts is to make under Novocain a circular aperture in either the palatal or the labial wall sufficiently large for permanent drainage and for irrigation. A more satisfactory operation is radical removal which should be done from whichever aspect is most convenient. If the cyst presents on the labial surface above the central incisors the operation will naturally be done by this route but there is always a chance of injuring the nerve supply to these teeth with resulting degeneration and infection of their pulps. The teeth if conserved should be tested for vitality from time to time. If the cyst presents on the palate it should be removed by reflecting the palatal mucosa as for the extraction of a buried supernumerary tooth; this is simpler and the innervation of the central incisors is not so gravely threatened. The cyst

shells easily out of the bony chamber but is usually attached to the coria in the upper (nasal) portion of the ducts and found to have been adherent to the deep surface of the palatal integument below.

REFERENCES

- Congdon E. C. (1920) *Anal Rec.* 19 307.
Kronfeld K. (1933) *Histopathology of Teeth and their Surrounding Structures* Philadelphia, p. 406.
Meyer A. W. (1911) *J. Anal. Lond.* 48 118.
(1913) *J. Amer. dent. Ass.* 18, 1851.
Stafus E. G., Austin L. T. and Gardner D. S. (1936) *Ibid.* 23 891.

THE SIGNIFICANCE OF THE ANGINAL SYNDROME IN ACUTE SPONTANEOUS PNEUMOMEDIASTINUM

By ANGUS M. SCOTT, M.D. Glasg.

ASSISTANT PHYSICIAN TO THE VICTORIA INFIRMARY, GLASGOW

(WITH ILLUSTRATIONS ON PLATE)

THE solution of the anginal puzzle has attracted most clinicians at one time or another and we would agree with Allbutt (1916a) that in this secret and fell disease there is a fascination to which no physician is a stranger a fascination in its dramatic events and in the riddle to be read. That pain indistinguishable in character and intensity from true stenocardia, may occur when for any reason there is a sudden increase in mediastinal pressure is not I think widely appreciated. Wassermann (1920) noted severe stenocardia in a patient suffering from influenza pneumonia complicated by interstitial emphysema, and this after discussing the possibilities he attributed to the sudden onset of mediastino pericardial emphysema.

While spontaneous pneumothorax whether the so called benign or that secondary to hypertrophic emphysema or other disease of the lungs is a relatively common condition mediastinal emphysema must surely be rather rare. This is perhaps surprising when one considers first, the widespread use during the past decade of artificially induced pneumothorax as a therapeutic measure in chronic pulmonary disease and secondly the present-day popularity of strenuous athletics with young people of both sexes. In the cases it has been thought worth while to record here occurring as they did in young healthy adults the condition is so analogous to acute benign spontaneous pneumothorax that similar terminology—with the omission of the word benign since its benignity is at least doubtful—seems desirable.

ETIOLOGY

Mediastinal emphysema may be a complication of many diseases of the lungs. For example Keltman (1910) and Wassermann (1920) have recorded its occurrence during the influenza pandemic of 1918-1919 as a complication of broncho pneumonia and they are in general agreement about the origin and spread of the antecedent interstitial emphysema. Small areas of lung tissue which had not been involved in the pneumonic process were the seat of considerable emphysema and the strain of severe cough or urgent dyspnoea was enough to rupture the damaged and distended alveoli and to allow air to escape into the interstitial tissues and so reach the mediastinum by way of the lung root following the reflexion of the pleura and the pericardium along the great vessels.

Air may also reach the mediastinum by the extension of a subcutaneous emphysema along the endo thoracic fascia or the deep fascia at the jugulum, by the direct sucking of atmospheric air through wounds in the apertures of the thorax, by injury to the trachea and main bronchi, by openings in the mediastinal pleura so that air produced by pneumo thorax is admitted, and by extension of retro peritoneal emphysema through the crus of the diaphragm.

With this in mind, it is not surprising that mediastinal emphysema may occur in widely differing pathological conditions, and the majority of cases reported have been, as one would expect, secondary to pulmonary tuberculosis. It has also been observed as a complication of pertussis and in the new born, as the result of strangulation by the umbilical cord. It has occurred as a complication of parturition, where the condition must be due to excessive pressure on the alveolar walls while the patient is straining during full inspiration. Surgical operations on the neck and thorax, tonsillectomy and irrigations of the accessory air sinuses, and stab wounds are some of the less common causes. Congenital cystic disease of the lung, whether of the diffuse so called honey comb type or of the commoner poly- or unicystic type, is another very possible source of pneumo thorax and mediastinal emphysema.

But in the spontaneous type of which the cases here cited are examples, strenuous exertion alone may be the determining cause, and as in the cases occurring in parturient women, there may be no coexistent disease of the lungs.

SYMPTOMS AND SIGNS

Cyanosis of varying degree is usual, but if the quantity of air is small, this may not be a prominent feature. Dyspnoea or perhaps more correctly an alteration in the character of the respiration has been noted in the majority of cases, and congestion of the superficial veins of the neck will be dependent on the amount of extravasated air. The presence of subcutaneous emphysema may mask the characteristic auscultatory signs which consist of curious metallic sounds having the rhythm of pericardial friction and of similar origin to the bruit de moulin that occurs in pneumo pericardium. This sound, which has been likened to the "rattle of dried peas on taut canvas," may be audible both to patient and observer during the act of deglutition, if the air lies in contact with the oesophagus in any part of its course in the mediastinum. Finally, pain, and pain of a very distinctive character, is so striking a feature of any serious increase in mediastinal pressure from whatever cause that I think it merits a very full investigation.

My own interest in the subject was aroused when I was called on to deal with the following patient.

CASE REPORTS

A boy, aged 16, was first seen in the early hours of May 28th, 1935, complaining of excruciating pain behind the sternum and radiating down both arms, particularly the left.

Family history—There is no record of pulmonary disease in the family and there is nothing of significance in his own history. He has always enjoyed good health and has taken part in all school games.

Present illness—On the evening of May 27th he took part in a half mile foot race trial, with a view to competing at his school sports a week later. On completing the course he coughed once, dropped down, and immediately experienced a curious sensation in his chest. After resting he was able to make his way home without assistance, and retired early to bed without complaint. During the

night he was restless, could not sleep, and in the small hours of the morning, sat bolt upright in obvious distress but was unable to utter a word.

Examination—When seen a little later the boy looked desperately ill, sitting rigidly in bed, clutching the bed clothes tightly with both hands, unable to speak, and with a very anxious expression. The pulse was small and thready, his respirations were now suspended, now shallow and restrained, and he was perspiring profusely. While his face was very pale, there was evidence of acrocyanosis, and when he could relax for a second, he pointed to the upper end of the sternum as the site of his distress. His temperature was 97.0° F, the pulse rate 130, his respiratory rate very variable, ranging between 10 and 40, and his pupils were widely dilated. He was given gr 1 of morphine hypodermically, and when this had taken effect it was possible to proceed with the examination of his chest. While his whole aspect at once recalled the classical picture of angina pectoris, his clinical story was so strongly suggestive of spontaneous pneumothorax that I was surprised to find no evidence in support of this diagnosis. After the acute distress passed off, he was able to say that his pain was deep seated behind his sternum, and radiated down his arms, occasionally shooting up behind his ears producing a sense of constriction, and at times running along the ramus of the lower jaw into his teeth. He was also conscious of some movement behind his sternum, where the severe pain took origin, sometimes from its upper, sometimes from its lower end.

A provisional diagnosis of air in the mediastinum suggesting itself, he was shortly afterwards admitted to hospital, where he was examined under the fluoroscopic screen and the diagnosis confirmed. Examined in the dorsal decubitus, no abnormality could be made out, but while lying in the left lateral position, a moderately large, single, lenticular shaped bubble of air could be seen in the posterior mediastinum, and is shown clearly in Fig. I.

Progress—While in hospital the boy had several further attacks of stenocardia, none of which was quite so severe as the original, but during one of these his systolic blood pressure fell from 120 to 85 mm. Hg, and he complained of pain running down the left arm, interrupted at the elbow to resume at the wrist and continue into the left little finger. For several hours before the onset of this attack he had been conscious of some pain in the left thumb and on examination there were areas of paresthesia in this arm. He was discharged from hospital on June 15th, 1935, and was advised to avoid strenuous exercise for six months.

In March, 1936, he had a similar but milder attack after a game of football, and again in July while playing tennis he felt a sudden acute pain in his chest, but radiological examination, which was carried out 48 hours later, failed to reveal the presence of air in the thorax, and it is probable that it had been absorbed in the interval. On this third occasion the characteristic auscultatory signs were still present 24 hours after the accident but had disappeared by the following day.

For particulars and the radiogram of the second case, the clinical details of which are unfortunately lacking, I am indebted to Dr Richard Schatzka, assistant radiologist to the Massachusetts General Hospital, Boston, who has kindly consented to its publication.

A healthy youth, aged 20, collapsed at the end of a hundred mile cycle race, complaining of severe pain in his chest in the region of the sternum, but unfortunately details as to its radiation are not available. He was examined radiologically some hours after the onset and Fig. II shows the mediastinal emphysema on the left side, and considerable subcutaneous emphysema in both supraclavicular areas, with no sign of pneumo thorax, if we restrict the use of that term to denote the presence of air in the pleural cavity. The air was completely absorbed in a few days.

COMMENT

While the question of a cardiopathy did not arise in the case of the first boy, there is no doubt that the occurrence of similar symptoms in a person twenty

years older would have given rise to considerable difficulty and in this connexion it is interesting to note that Hamman (1934) dealing with the differential diagnosis of coronary occlusion cites three cases of interstitial emphysema of the lungs that came under his personal observation and where following the escape of air into the mediastinum the pain was similar in type and distribution to that seen in coronary disease.

Inspection of the lateral view of the thorax in Fig 1 shows the collection of air to be in the posterior mediastinum in close contact with the tissues surrounding the aorta, and the increased pressure must have exerted its greatest effect on these structures. The fact that the air was not distributed loosely through the tissues but remained circumscribed may have accounted for the great severity of the reaction, and in my view it seems difficult to escape the conclusion that this sudden alteration of pressure was responsible for the initiation of the anginal attack. That alteration in mediastinal pressure particularly if it be sudden may have alarming and even fatal results is well known. More than ten years ago Lord (1925) noted that death apparently due to deep emphysema had been observed in 3 instances after the induction of artificial pneumo thorax and Ballou and Francis (1929) quote a series where mediastinal emphysema as a complication of artificial pneumothorax occurred 15 times in 8 of 63 patients so that the work of these two on the consequences of variations in mediastinal pressure is of some practical importance. They conclude that the initial change in blood pressure after the inflation of a balloon in the rabbit's mediastinum is always a fall, and that some of the results of increased pressure in the mediastinum are (a) pulmonary emphysema (b) oedema of the tracheo bronchial mucous membrane, (c) pericardial effusion (d) disordered heart action and (e) acute oedema of the lungs. Normally the mediastinal pressure is round about minus 4 mm. of water and there are no noticeable changes until it reaches zero when changes do occur and progress rapidly depending on the amount of pressure and the rapidity of increase. When the pressure is raised beyond plus 35 death takes place from acute pulmonary oedema.

DISCUSSION

Many will recall with interest the lively debates of twenty years ago as to whether anginal pain was aortic or myocardial in origin. Allbutt (1916b) at great pains to prove by masterly and convincing argument that angina pectoris is a disease sui generis talks at one of his contemporaries who dares to prefer the more popular "syndrome" or symptom group concept, and accuses him of propounding the theory that a similar series of events can have dissimilar causes. He himself (1916a) finds an excuse for this reluctance to accept angina as a disease in the shifting explanations of the pathology of the anginous process and surely there is some justification for such hesitation if it be taken as proved that this dynamic procession of symptoms may result from such vastly different pathological conditions as coronary thrombosis and mediastinal emphysema. Such an admission would not necessarily imply that the mechanism responsible for the dynamic procession was different in the two conditions but would certainly suggest that it may be set in motion by very different pathological factors.

Ewart (1912) quotes a case from Perez that has evoked much comment, where the patient, an elderly phthisical subject suffering from tuberculous medi-

astinopericarditis experienced typical anginal pain, and Allbutt (1916a) mentions the remarkable case of angina recorded by Haygarth of Chester which proved on autopsy to be one of mediastinal suppurative inflammation apparently involving the base of the heart and the great vessels. Haro (1900) considered that angina was due to painful distension of the mediastinum and this to intense vasomotor constriction in very large areas elsewhere but Allbutt points out that vasomotor changes although relatively common in angina are not essential and, propounding his well known pressure tambour theory in which the suprasmoid portion of the aorta is regarded as the mainspring of the attack, he adduces valuable evidence in its support. There can be little doubt, I think, that true angina may occur in the entire absence of any pathological lesion in the coronaries and conversely gross disease in these vessels does not necessarily predicate attacks of angina. It seems reasonable to suppose therefore that they play no part in the actual mechanism of the anginal syndrome. That disturbance of their function however particularly if it be sudden—spasm or thrombosis—may set the anginal mechanism in motion seems more than probable and if so must we not assume the presence of a 'knot of exalted sensibility' somewhere in the circuit? Most physiologists are now agreed that there is an important vasosensory area in the first part of the aorta, and Spiegel and Wassermann (1926) by injecting saline into a part of the aorta that had been ligatured off were able to produce pain in dogs (as registered by movements of the animal's lower jaw) after vagal section and sympathectomy. This proof of pain as a result of stretching of the investment of the aorta is in complete accord with the views of Allbutt and Wenckebach and the former (1915a) cites a number of cases of rupture of the aorta, where the vessel coats were split asunder by dissecting hæmorrhage and where this accident was associated with intense anginal pain. Sutton and Lueth (1930) who are on the side of the coronarians state that the nerve fibres responsible for conducting the pain sensations from the heart are those fibres in the adventitia of the blood vessels or the adjacent tissues.

It seems reasonable to postulate the existence of a complex and highly specialised centre controlling the anginal mechanism when one considers the analogy of a similar control of the important lung reflexes by just such a centre or centres situated at the lung root, and of whose existence the thoracic plastic surgeon is only too well aware. Remembering the course of the sensory fibres which accompany veins as well as arteries it seems likely that this centre—or the more important station of this centre—is situated in the integuments of the aorta and that a lesser or substation may be similarly related to the pulmonary artery which might account for the dramatic results of embolism of that vessel. Further from some interesting observations of Wassermann (1931) on forced respiration and apnoea in angina it seems that there may be a very close liaison between these cardiac and respiratory control stations. Indeed according to Anrep (1930) there are some physiologists who maintain that the aorta and the carotid sinus are the chief regulators of respiration. Fortunately the vexed question of the pathway of impulses to the sensorium and their various reflex arcs does not come within the scope of this discussion.

SUMMARY

Two cases of acute spontaneous pneumomediastinum are reported and the occurrence of the anginal

syndrome in one of these is noted and discussed. A plea is put forward for a reconsideration of Allbutt's well thought out "sensitive tambour" theory of the initiation of anginal pain.

REFERENCES

- Allbutt C (1915a) *Diseases of the Arteries, including Angina Pectoris* London vol 2, p 211
 — (1915b) *Ibid*, p 213
 — (1915c) *Ibid*, p 219
 — (1915d) *Ibid*, p 454
 — (1915e) *Ibid*, p 464
 Anrep G V (1936) *Lane Medical Lectures Studies in Cardiovascular Regulation* London p 32
 Ballou, H C and Francis B F (1929) *Arch Surg Chicago*, 19 1627
 Ewart W (1912) *Brit med J* 1 771
 Hamman L (1934) *Ann intern Med* 8 417
 Hare F (1906) *Med Rec* 70 601
 Kelman S R (1919) *Arch intern Med* 24 332
 Lord F T (1925) *Diseases of the Bronchi Lungs and Pleura* London 2nd ed p 736
 Splerger E A and Wassermann S (1926) *Z ges exp Med* 52 180
 Sutton D C and Lueth H C (1930) *Arch intern Med* 45, 827
 Wassermann S (1920) *Wien klin Wschr* 33 122
 — (1931) *Z klin Med* 117 321

ON THE RELATIONSHIP BETWEEN THE MALE GONADS AND THE ADRENAL GLAND

By W CRAMER, Ph D Berlin, D Sc Edin,
M R C S Eng

AND

E S HORNING, M A, D Sc
BEET MEMORIAL FELLOW

(From the Imperial Cancer Research Fund, London)

(WITH ILLUSTRATIVE PLATE)

THE adrenal of the adult male mouse consists of a relatively large medulla and a relatively narrow cortex. It has been described and figured by Cramer in his book "Fever, Heat Regulation, Climate and the Thyroid Adrenal Apparatus". When adult male mice are castrated the volume of the medulla charged with adrenaline undergoes a marked diminution and a broad ring of tissue appears between the central medullary core and the cortex (Fig II on Plate). This ring of tissue when examined by the routine histological methods is seen to consist of cells which have neither the appearance of cortical cells nor of medullary cells. The appearance of this ring of tissue after castration was first described by Deane'sly and has now been confirmed by us. It is identical in appearance with the ring of tissue seen in normal young female mice and described in the literature as

boundary zone or X zone. This zone is not present in the adrenals of male mice of mixed strains. In the adrenals of female mice it gradually disappears as the animals get older.

When the male sex hormone testosterone is injected into castrated male mice the volume of the medulla increases, the X zone rapidly disappears, and the adrenal resumes the appearance of the gland seen in a normal adult male mouse (Fig I). The same result is obtained when testosterone is injected into young but sexually mature female mice, in which this zone is almost always present. This applies to intact and to spayed female mice (Fig IV). In such mice the injection of testosterone also leads rapidly to the disappearance of the boundary zone, with an increase in the volume of the medulla (Fig III). None of the anterior pituitary hormones that we have applied produces this effect which appears, therefore, to be caused by a direct action of testosterone on the adrenal gland. The oestrogenic hormones also fail to bring about a disappearance of the X zone in normal female and in spayed female mice.

The testosterone preparation used was testosterone propionate, which had been very generously put at our disposal by Messrs Schering Kahlbaum. It was injected three times weekly in doses of 1 mg dissolved in oil for periods varying from 12-28 days. The first injection was given two weeks after castration.

These observations demonstrate a close functional relationship between the adrenal gland and the male sex hormone. In the absence of the latter the number of the medullary cells fully charged with adrenaline and available for the functional activity of secreting adrenaline is greatly diminished. The X zone or boundary zone which appears after castration consists mainly of medullary cells which have temporarily been inhibited from forming adrenaline. That this is so can be demonstrated conclusively by examining the adrenal gland of castrated mice after fixation in osmic vapour. By this method the adrenaline of the medullary cells is rendered visible as osmophil granules. In the gland of a normal male mouse all the medullary cells are fully charged with adrenaline, and the medulla has a regular outline sharply delimited from the cortex by a leash of blood vessels. After castration the adrenaline granules have partly or completely disappeared from the peripheral part of the medulla. There is still a central core of medullary cells fully charged with adrenaline, but this central core is diminished in volume and its outline has become irregular. Passing outward from this there is a gradual transition from these fully charged cells to cells only partly charged with adrenaline granules, and in the peripheral part quite free from them, but even when the cells are free from

LEGENDS TO ILLUSTRATIONS ON PLATE

MR PILCHER

FIG I—Antero posterior view showing high diaphragm increased transverse diameter of heart, and calcified plaque near left border

FIG II—Oblique view showing ring of calcification

FIG V—After operation showing lower diaphragm decreased transverse and increased vertical diameter of heart

MR BOWDLER HENRY

FIG I—Skigram of a dry specimen of the palate of an Australian aboriginal showing cyst of the nasopalatine canal. (Specimen given to the writer by Dr W E Fish.)

FIGS II and III—Skigrams of nasopalatine cysts showing typical variations of shape

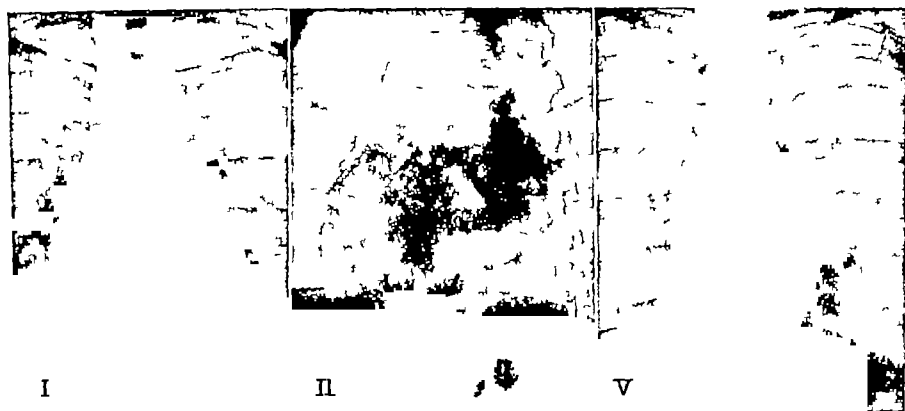
FIG IV—Skigrams of a nasopalatine cyst with silver probe passed through sinus opening into the mouth

FIG V—Skigram of a nasopalatine cyst in an edentulous patient causing intermittent frontal neuralgia and symptoms of toxæmia

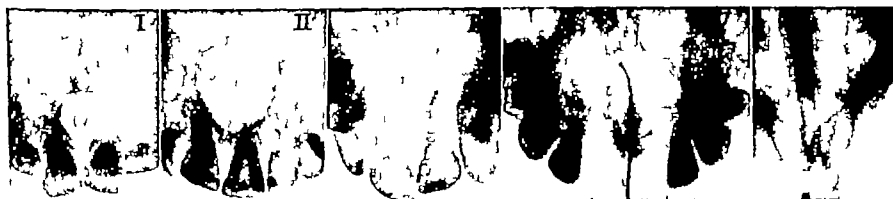
DR SCOTT

FIG I—Lateral view of thorax showing bubble of air in posterior mediastinum in a boy aged 16 with anginal attacks

FIG II—Antero posterior view showing subcutaneous emphysema in suprasternal regions and mediastinal emphysema on left side



20.IX.35 24.IX.35 10.IX.36
MR. PILCHER PERICARDIAL RESECTION FOR CONSTRICTIVE PERICARDITIS



MR. BOWDLER HENRY CYSTS OF NASOPALATINE CANAL



DR. SCOTT ANGINAL SYNDROME IN ACUTE SPONTANEOUS PNEUMOMEDIASTINUM



FIG I



FIG II

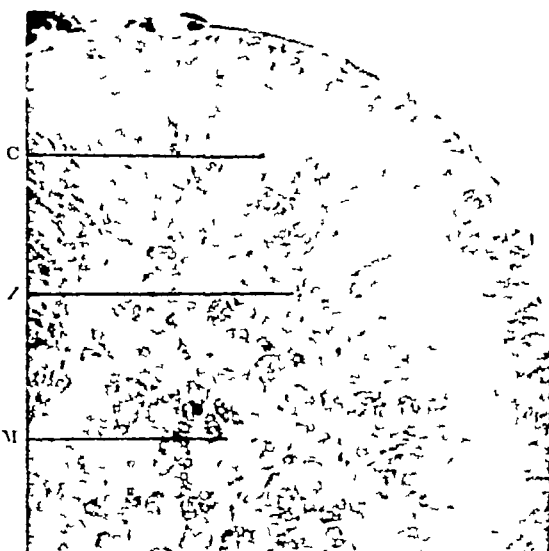


FIG III

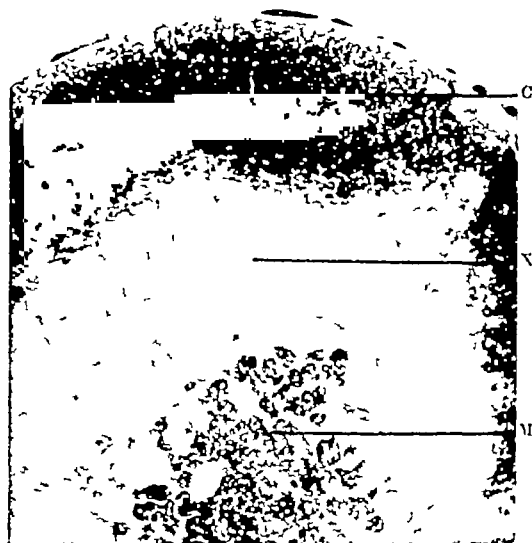
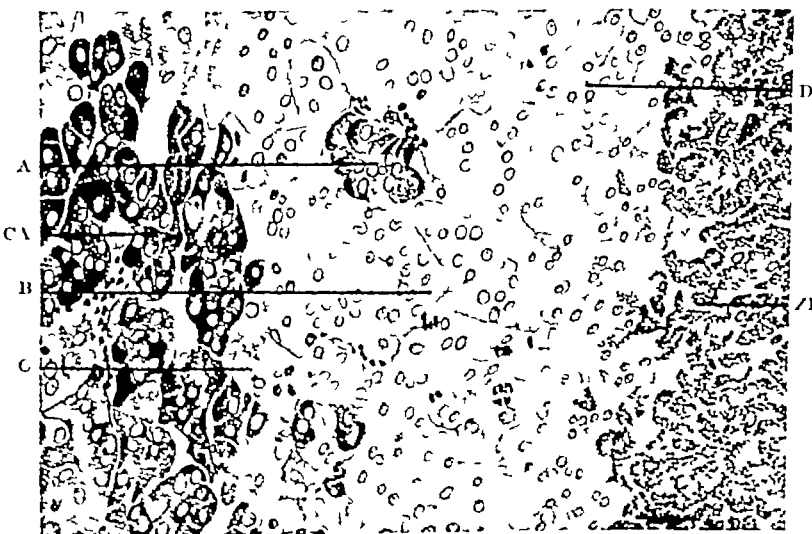


FIG IV



100 μ
FIG V

DR CRAMER AND
DR HORNING
MALE GONADS
AND THE ADRENAL GLAND

adrenaline they still show the arrangement in alveoli characteristic of the medulla. Such an alveolus may sometimes consist half of cells still containing adrenaline granules, while in the other half the cells are free from them or an alveolus of cells fully charged with adrenaline may lie like an islet among cells deprived of adrenaline. In the peripheral part of the X zone the cells are often indistinguishable from cortical cells deprived of lipoids so that the peripheral part of the X zone may consist of cortical cells. Even the leash of blood vessels which normally delimit the medulla can sometimes be seen at the peripheral end of the X zone. The same phenomenon of an ebbing away of adrenaline from the peripheral part of the medulla can be demonstrated in the adrenals of young female mice where the X zone is almost always present (Fig V). The phenomenon was described and figured in greater detail than is possible in this communication by Cramer in his book, although he did not recognise then that it was essentially a sex difference.

A number of other observers (Tamura, Howard Miller Deaneley and Whitehead) have since interpreted the X-zone or boundary zone as representing a separate anatomical entity distinct from either cortex or medulla and disappearing as the result of a process of degeneration. Grollman in his book calls it a third tissue and ascribing to it on purely speculative grounds masculinising properties has called it androgenic tissue. The rapid appearance of this zone in adult male mice after castration and its rapid disappearance after the administration of testosterone shows that this view is untenable and that the term androgenic tissue is in any case a singularly inapt misnomer.

CONCLUSION

The experiments with testosterone show that the X zone is the morphological expression of a functional change in the adrenal gland, and in so far as this functional change consists in a marked diminution in the number of cells charged with adrenaline and available for the secretion of adrenaline this functional change may logically be described as an inhibition. The action of testosterone on the adrenal gland thus affords a satisfactory explanation of the phenomenon of the X zone in normal mice. It is absent in male mice, because under the influence of testosterone the medullary cells maintain their full load of adrenaline throughout the whole extent of the medulla. The X zone is present in young female mice even when sexually mature, because in the absence of the male sex hormone the peripheral cells of the medulla do not maintain their load of adrenaline. The fact

that the X zone disappears in female mice as they grow older seems to indicate that there is an increased formation of the male sex hormone in female mice as age advances.

REFERENCES

- Cramer W (1928) *Ferret Heat Regulation Climate and the Thyroid Adrenal Apparatus*, London.
 Deaneley R (1928) *Proc roy Soc B* 193 5 3
 Grollman A (1935) *The Adrenals* London
 Howard Miller H (1927) *Amer J Anat* 40 51
 Tamura J (1926) *Brd exp Biol* 4, 81
 Whitehead R (1931) *Ibid* 12 395
 — (1933) *J Anat* 67 387

THE TREATMENT OF STREPTOCOCCAL INFECTIONS IN MICE WITH 4,4'-DIAMINODIPHENYLSULPHONE

By G A H BUTTLE, M.A. Camb M.R.C.S. Eng

DORA STEPHENSON Ph.D. Leeds

OF THE WELLCOME PHYSIOLOGICAL RESEARCH LABORATORIES
BECKENHAM KENT

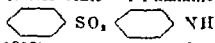
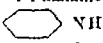
S SMITH Ph.D. Kiel, T DEWING M.Sc. Lond.

AND

G E FOSTER, Ph.D. Lond.

OF THE WELLCOME CHEMICAL WORKS, DARTFORD

ARTUR Domagk's initial discovery (1935) of the therapeutic value of Prontosil in streptococcal infections of mice, and the further discovery by Tréfouël Nitti and Bovet (1935) that *p*-amino benzene-sulphonamide (commonly called sulphamidamide or sulphonamidamide P) was also active a number of other compounds of this series have been tested (Buttle et al. 1936 Fournéau et al. 1936 Goltsedet et al. 1936 Tréfouël et al. 1937 Gray et al. 1937) but in no case was there a striking increase in activity over sulphonamidamide.

The present communication deals with two compounds of a different chemical structure. The first 4,4'-diaminodiphenylsulphone, is considerably more active than sulphonamidamide in curing streptococcal infections of mice but is more toxic to mice; the second 4,4'-dinitrodiphenylsulphone is as active as sulphonamidamide but is less toxic. 4,4'-diaminodiphenylsulphone NH_2 ,  SO_2 ,  NH_2 , (Fromm and Wittmann 1908) occurs in very long colourless rectangular plates m.p. 176°C. It is sparingly soluble (0.01 per cent.) in water at room temperature, but more soluble (0.05 per cent.) in

LEGENDS TO ILLUSTRATIONS ON PLATE

DR. CRAMER AND DR. HORNING

All sections are of adrenal glands of mice fixed by the osmic vapour method. Figs I-IV are photomicrographs and Fig V is a camera lucida drawing. In Figs I-IV C=cortex; Z=zona reticularis; X=boundary zone or X zone; and M=medulla.

FIG I.—Section through adrenal gland of a castrated male mouse showing the disappearance of the X zone after administration of testosterone propionate.

FIG II.—Adrenal of castrated male mouse with a broad X zone.

FIG III.—Section of adrenal of a spayed female mouse illustrating complete disappearance of the X zone following treatment with testosterone.

FIG IV.—Adrenal of a spayed female mouse showing a broad X zone.

FIG V.—X zone of female mouse adrenal showing on the left the medullary core of the gland (CA) with its cells fully charged with adrenaline and on the right the inner end of the zona fasciculata (ZF) of the cortex with its cells containing lipid globules. Between them lies the broad X zone. It is composed of cells partly charged with adrenaline (C) lying next to the medullary core and of cells with large clear nuclei free from adrenaline but still arranged in alveolar formation (B). Among them there are islets of cells fully charged with adrenaline (A). Thus part of the X zone becomes completely charged with adrenaline after testosterone and belongs to the medulla. The peripheral part of the X zone in this figure consists of irregularly arranged cells free from cell inclusions (D) and it is cortical in origin.

Z.J.

TABLE I
COMPARISON OF SULPHANILAMIDE, 4 4'DINITRODIPHENYLSULPHONE, AND 4 4'DIAMINODIPHENYLSULPHONE

Treatment (by mouth)	Haemolytic streptococci Richards I P	Approx number of organisms	Number of mice (out of groups of 10) dying on each day after infection										Mice surviving 10 days
			1	2	3	4	5	6	7	8	9	10	
Controls untreated	c cm 10-9 10-7 10-5	2 130 13,000	0 3 7	2 5 3	2 0 0	0 0 0	0 0 0	0 0 0	0 1 0	0 0 0	0 0 0	0 0 0	6 1 0
Sulphanilamide— 40 mg 1, 2, 3 & 4th day 4 mg " " 0.4 mg "	10-5 10-5 10-5	13,000 13,000 13,000	0 1 1	0 2 4	0 0 0	0 0 1	0 0 0	0 0 2	0 2 0	0 1 0	0 0 0	2 0 1	8 4 1
4 4'dinitrodiphenylsulphone— 40 mg 1, 2, 3 & 4th day 4 mg " " 0.4 mg "	10-5 10-5 10-5	13,000 13,000 13,000	1 0 2	0 1 2	1 0 1	0 0 0	0 0 0	1 0 0	0 0 0	0 0 0	0 2 1	0 0 0	7 7 4
4 4'diaminodiphenylsulphone— 4 mg 1, 2, 3 & 4th day 0.4 mg " 0.04 mg "	10-5 10-5 10-5	13,000 13,000 13,000	2 0 1	2 0 1	1 0 2	0 0 0	0 0 0	0 0 0	0 0 0	0 0 1	1 1 0	0 1 0	4 8 5
Sulphanilamide— 50 mg daily	10-3	1,300,000	6	2	1	0	0	0	0	0	0	0	1
4 4'diaminodiphenylsulphone— 2 mg daily for 6 days 1 mg daily for 4 days	10-3	1,300,000	0	2	1	0	0	0	0	2	0	0	5

Mice weighed 25 g

hot water 4 4'dinitrodiphenylsulphone (Fromm and Wittmann 1908) is an amorphous yellowish powder, insoluble in water

TOXICITY

Sulphanilamide is tolerated in 50 mg doses given by mouth to mice of 20 gramme weight, these doses can be repeated daily in 25 g mice infected with streptococci (Buttle et al. 1936). The 4 4'dinitrodiphenylsulphone is tolerated in 200 mg doses given by mouth, but a 400 mg dose is lethal, doses of 40 mg can be given repeatedly to infected mice. The 4 4'diaminodiphenylsulphone is tolerated in 5 mg doses given by mouth, 2 mg can be given daily to normal or infected mice, but daily doses of 5 mg kill some of the animals. The drug is slightly more toxic in infected animals.

Although the diaminosulphone is about ten times as toxic as sulphanilamide when a single dose is given to normal mice (and about twenty five times as toxic when the doses are given daily to infected animals), it is not more toxic to normal rabbits and monkeys. Single doses of 2.0 g per kg of either of the drugs produce slight symptoms in the rabbit but not in the monkey. (The dinitro compound has not yet been tried in these animals.) A single dose of 0.3 g of the diamino compound was taken by a healthy human individual and caused no symptoms, five hours after the administration of the drug, however, the blood contained a very small quantity of methaemoglobin. A monkey which had received much larger doses of the drug (1.0 g per kg) had a much larger quantity of methaemoglobin in the blood, but this was not associated with any respiratory embarrassment or other change. A similar dose of sulphanilamide when given to another monkey did not produce methaemoglobinemia.

We are indebted to Mr G. Discombe, St Bartholomew's Hospital, for demonstrating the presence of small quantities of methaemoglobin in the blood (see Discombe 1937). The urine of the individual mentioned above was examined for the presence of the sulphone using the diazo reaction with thymol. There was a considerable quantity in the 12 and the 18 hour specimens, but very little was excreted in the

first 6 hours. Blood counts were normal the day after taking the drug.

Toxic doses of these sulphones have an action on the nervous system in mice which is somewhat different from that of sulphanilamide. With the new drugs the mice appear exerted and often run continuously round their cages, if they are taken from the cages and placed on the table, they move about without any apparent purpose, sometimes running straight over the edge, when lethal doses are given, they become paralysed and have difficulty in respiration. With sulphanilamide, on the other hand, the mice rapidly become paralysed and move their limbs continuously in an incoördinate manner. The symptoms produced by the new drugs are much more persistent than with sulphanilamide, they may last for 48 hours or longer, whereas with sulphanilamide the mice either die or recover within 6 hours. Lethal doses of the new drugs cause intense dilatation of the stomach and small intestine in mice, and slight swelling of the belly may be observed in rabbits which receive large doses, but it is not great in proportion to the size of the animal. These changes are not produced by sulphanilamide.

THERAPEUTIC EFFECTS

In haemolytic streptococcal infections—Mice were infected with streptococci ("Richards") intraperitoneally and treated with the various drugs, administered orally (Buttle et al. 1936). Table I shows a comparison between the therapeutic effects of sulphanilamide and of the dinitro and diamino sulphones. The dinitrosulphone is as effective as sulphanilamide when similar doses are used. In the case of the diaminosulphone, doses of 0.4 mg are as effective as 40 mg of sulphanilamide, and doses of 0.04 mg are only slightly inferior, owing to the toxicity of the drug, however, doses of 4 mg of the sulphone do not give such good results. The second part of the Table shows that a better degree of protection is obtained against a large dose of culture with 2 mg of the diaminosulphone than with 50 mg of sulphanilamide. (Approximately 2000 mice have been used in this investigation but hitherto no more than one strain of haemolytic streptococci.)

As the diaminosulphone is not more toxic for rabbits than sulphanilamide, it would be interesting to know how the two drugs compare in therapeutic activity in this animal. Unfortunately we have not been able to obtain a Lancefield Group A strain or any human strain which is virulent for rabbits. Preliminary experiments have been done with a Group C strain P.230 which was isolated from a guinea pig epididymis by Dr Theobald Smith and was sent to us by the courtesy of Dr Homer Swift. Although the diaminosulphone is more active than sulphanilamide the difference between the drugs is not so great as in the mouse experiments. It appeared from the rabbit experiments that daily doses of 15 mg per kg of the sulphone by mouth are not quite so effective as 160 mg per kg of sulphanilamide; on the other hand doses of 160 mg per kg of the sulphone are more effective than doses of 160 mg per kg of sulphanilamide.

The bactericidal effect of the blood of a (3.1 kg) monkey (*Sileneus rhesus*) was studied at intervals after the administration of (a) 4 g of sulphanilamide and (b) 1 g of the diaminosulphone given by mouth (Table II). The rotating tube technique (Colebrook

TABLE II

Bactericidal effects induced in the blood of a monkey by the administration of (a) 4 g of sulphanilamide and (b) 1 g of 4:4 diaminodiphenylsulphone

Treatment	Hours after drug	Number of organisms implanted in 0.5 c.c. of blood (rotating tube technique)				
		1	20	300	1000	20,000
(a) Sulphanilamide 4 g (Feb 23rd 1937)	0	II	II			
	1	0	0	0	0	II
	5	0	0	0	0	+
	24	0	0	+	II	
	48	II	II			
(b) 4:4 diaminodiphenylsulphone 1 g (April 18th 1937)	0	II	II			
	14	0	0	0	+	+
	5	0	0	0	0	+
	24	0	0	0	0	+
	48	0	0	0	+	+
	96	0	0	0	II	
	120	II	II			

0—no hemolysis of blood and no streptococci found on subculture

—+—no hemolysis of blood, but streptococci grown on subculture

II—hemolysis of the blood with full growth of streptococci

Controls with normal blood from another animal were put up on each occasion and the cocci grew freely from the smallest inoculum.

et al. 1936 Todd 1927) was used in these experiments. The maximum bactericidal effect was of the same order in both cases the effect of sulphanilamide however disappeared within 48 hours whereas that of the diaminosulphone which was not quite so rapid in its onset lasted for 96 hours. This experiment was repeated another monkey weighing 2.5 kg received 200 mg of each drug on two separate occasions and it was again found that the maximum bactericidal effect obtained was of the same order for the two drugs. 300 cocci were killed in 0.5 c.c. samples after treatment whereas 3 cocci grew freely in normal samples. The effect of the diaminosulphone was again more persistent than that of the sulphanilamide.

The bactericidal effect in the blood of man after the administration of the drug by mouth has not been sufficiently determined but in one experiment in which a dose of 0.3 g. was given 0.5 c.c. samples

of blood (G A II B) withdrawn six hours after the administration destroyed 400 cocci and inhibited the growth of 40 000 whereas 400 cocci grew in a specimen of blood taken before administration, and 40 cocci were destroyed.

When 0.001 per cent of the diaminosulphone was added to 0.5 c.c. quantities of monkey blood in vitro a bactericidal effect was obtained which was greater than that with sulphanilamide in equal concentrations but it was not quite so great as that with 0.01 per cent of the latter. With 0.001 per cent of the sulphone 80 cocci were completely destroyed and the growth of 800 was slightly delayed with sulphanilamide on the other hand 0.001 per cent. only delayed the growth of 8 cocci for 48 hours while 0.01 per cent delayed the growth of 800 cocci for 72 hours and destroyed 80 completely. The results with 0.01 per cent of the sulphone were slightly better than those with 0.01 per cent of the sulphanilamide.

In another experiment with human blood (N McL.) 120 000 cocci were destroyed by 0.01 per cent of the sulphone whereas with a similar concentration of sulphanilamide 12 000 were destroyed and the growth of 120 000 delayed for 48 hours. 120 grew freely in the control and 12 were destroyed.

In non-streptococcal infections.—Preliminary experiments indicate that the diaminosulphone (2 mg doses) is considerably more effective than sulphanilamide (40 mg doses) in prolonging the lives of mice infected with pneumococci but it is as yet uncertain whether mice can be completely cured. In the treatment of typhoid infections the diaminosulphone is less effective in doses of 2 mg than sulphanilamide in doses of 25 mg. These differences in therapeutic efficiency appear to be associated with the fact that a prolonged action of the drug is required for protection against pneumococcal infections in mice and a rapid action is necessary for protection against typhoid infections (Buttle et al. 1937). The diaminosulphone is also effective in staphylococcal infections.

DISCUSSION

When patients are treated with sulphanilamide it is necessary to give large doses by mouth. This is sometimes inconvenient or difficult. It would therefore be of interest if a compound could be discovered which even when given in smaller doses would be as efficient as sulphanilamide in treatment.

The results presented in this paper show that 4:4 diaminodiphenylsulphone is much more active than sulphanilamide in curing streptococcal infections of mice and that, while it is more toxic for mice than the latter compound it is not more toxic for rabbits and monkeys except that it causes methemoglobinemia more readily in the monkey. When the diaminosulphone is added directly to monkey or human blood in vitro it appears to be slightly more effective than sulphanilamide. Further when the drugs are given by mouth to normal monkeys the maximum bactericidal effects obtained in the blood are of the same order in each case although the action of the diaminosulphone is more persistent. In view of these facts it is somewhat difficult to understand why mouse infections are cured by doses of the diaminosulphone so much smaller than those required with sulphanilamide. The latter is absorbed and excreted very quickly by the mouse the concentration in the blood falls to about one tenth of its initial value in 7 hours and to one hundredth of this value in 13 hours. It seems probable therefore that there is not a uniformly high bactericidal effect. The experiment

with the monkey suggests that the bactericidal effect of the sulphone, on the other hand, is maintained. Thus persistence of the bactericidal effect may account, in part, for the difference between the drugs, but it seems unlikely that it is the only factor concerned. It is highly improbable that either the diamino- or the dinitro sulphone could give rise to *p* aminobenzenesulphonamide in the body, and their activity is of special interest since it indicates that streptococcidal activity is not confined to drugs which contain, or could easily produce, substances containing a sulphonamide group.

SUMMARY

1 4,4'-diaminodiphenylsulphone (diaminosulphone) is active in curing streptococcal infections of mice in doses of about one hundredth of those required with *p* aminobenzenesulphonamide (sulphanilamide), it is, however, twenty five times as toxic. The drug is not more toxic than sulphanilamide in normal rabbits or monkeys, except that it is more active in producing methemoglobinæmia in the latter animal.

2 The corresponding dinitro compound (dinitro sulphone) is not so toxic to mice as sulphanilamide and its antistreptococcal activity in mice is not inferior to that of the latter substance.

We have to thank Mr W H Gray for the preparation of the dinitrosulphone, Dr J W Trevan for his help and criticism, and Mr H Proom for estimating the sulphone and sulphanilamide in the specimens of urine and blood.

Note—Since the above paper was written Dr F Nititi of the Pasteur Institute, Paris, has kindly written to us saying that he has been working independently with the dinitro compound, and that his results are in general agreement with ours.

REFERENCES

- Buttle, G A H, Gray W H and Stephenson D (1936) *Lancet* 1 1286.
 — Parish, H J, McLeod, M and Stephenson D (1937) *Ibid.* 1, 681.
 Colebrook, L, Buttle, G A H and O'Meara R A Q (1936) *Ibid.* 2, 1323.
 Discombe, G (1937) *Ibid.* 1 626.
 Domagk, G (1935) *Deut. med. Wschr.* 61 250.
 Fournace, E, Tréfouët J and Mme Nititi F and Boret D (1936) *C R Soc Biol Paris* 122 652.
 Fromm, E and Wittmann, J (1908) *Ber. dtsch. chem. Ges.* 41 2269, 2270.
 Golssedet, P, Despois R, Galliot, O and Mayer, R (1936) *C R Soc Biol Paris* 121, 1082.
 Gray, W H, Buttle G A H, and Stephenson D (1937) *Biochem. J.* (in the press).
 Todd E W (1927) *Brit. J. exp. Path.* 8 1.
 Tréfouët, J and Mme Nititi, F and Boret D (1935) *C R Soc Biol Paris* 120, 750.
 — — — (1937) *Ann. Inst. Pasteur* 58, 30.

TEHDY SANATORIUM, CAMBORNE—Mrs Bolitho, wife of the lord lieutenant of Cornwall, opened a new orthopaedic unit costing £5000 at this hospital on May 19th. It provides accommodation for an eight bed ward, five double bed ward, and three single bed wards, and has been designed to give the maximum of air and sunshine. It is to be used entirely for surgical orthopaedic tuberculosis cases.

BIRTH-RATE IN SOVIET UNION—According to official reports, the birth rate in Soviet Russia is steadily increasing. Last January the number of births registered was 21.7 per cent higher than in January 1936, and in the first quarter of this year it was about 30 per cent higher than in the corresponding quarter of 1936. Of the Union republics, the Ukraine records the largest increase for this quarter—namely, 70 per cent. Up to April 1st the local authorities had effected transfers of 566 million roubles for the payment of allowances to mothers of large families. The number of mothers in the country receiving these allowances is given as 270,000.

ERYSIPELAS TREATED WITH PRONTOSIL

BY G E BREEN, M D N U I
AND

IAN TAYLOR, M B, M R C P Lond, D P H
SENIOR ASSISTANT MEDICAL OFFICERS AT THE NORTH
EASTERN FEVER HOSPITAL LONDON

EACH of the preparations of the Prontosil group has been used in the treatment of erysipelas as it appeared. Of the early publications on this subject mention may be made of the work of Mever Heine and Huguennin (1936) who treated 160 cases of erysipelas, beginning in May, 1935. They found that apart from rare exceptions a fall of temperature and local amelioration took place with impressive similitude. Eight of their cases were infants under a year, all of whom were successfully treated. Tonndorf (1936) reports 22 prompt successes with one relapse.

The route of administration of these preparations may be varied to suit individual cases. The use of the oral route has received strong support from the recent experimental work of Marshall, Emerson, and Cutting (1937) with para aminobenzenesulphonamide. These workers found that the concentration in the blood of dogs does not mount quicker or higher after subcutaneous injection than after oral administration. Absorption by the gastro intestinal tract is complete in four hours, and two or three days elapse after discontinuation before the body is free of the drug.

RESULTS

The present consecutive series consists all told of 46 cases. Of these all but 5 were examples of the facial variety. The diagnosis was made on purely clinical grounds. No bacteriological confirmation was sought or considered necessary. Prontosil in one or other form was given to 35, and various other forms of therapy to 10. All cases were in addition painted locally twice daily with a mixture of glycenn and ichthyol. In the whole series there were 2 deaths. One was a man aged 71, who was admitted in a moribund state with gangrene of the nose, cheeks, eyelids, forehead and scalp (at sight of which an attendant fainted). He was obviously beyond the reach of any therapeutic measure or agent and died within 48 hours, he is omitted from either series. The other was also a man aged 71, admitted with sharp erysipelas of the left hand and forearm, which responded promptly to treatment with Prontosil Album. Unfortunately five days after admission a cerebral hæmorrhage supervened, and death occurred within 24 hours.

An analysis of the records of the remainder of the patients is illuminating. Admittedly 10 controls are much too few for even so small a series as this one, nevertheless the evidence they afford cannot be disregarded, especially when it is considered that clinically they were the milder cases and were purposely selected for that reason. Summarised the results are as follows—

Of 35 cases treated by prontosil from admission 33 had regressed 1 had spread and 1 was stationary 48 hours later. There was one subsequent relapse. Of 10 cases not treated with prontosil 4 had regressed 5 had spread, and 1 was stationary 48 hours later. There were no relapses (Fig. 1). Of the five no prontosil cases which had spread 3 were subsequently treated with prontosil, and within 48 hours they had also regressed.

The effect on the temperature is shown by the composite graph in Fig 2 and on the pulse by the graph in Fig 3. It will be seen that the average temperature of the prontosil cases fell to normal or below in 48 hours whereas the average of the other cases remained above normal. As regards the pulse the advantage lies with the no prontosil group but it has to be remembered that they were regarded clinically as milder cases and this is reflected in the lower temperature and pulse-rate on admission.

The cases are given in age-groups in the Table. It will be noticed that of 6 cases in the 50-65 no prontosil group 3 spread while of a similar number in the prontosil group all regressed. Of 9 cases in the over 65 prontosil group none spread and only one was

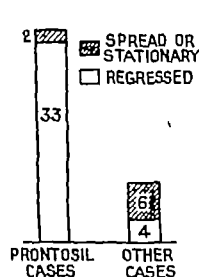


FIG 1—Effect of prontosil on the progress of the disease.

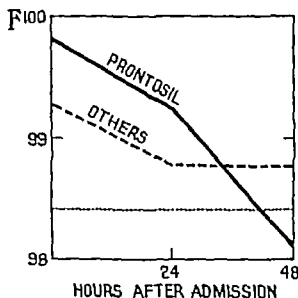


FIG 2.—Average temperature chart.

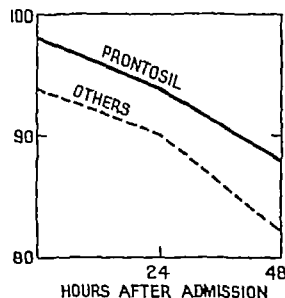


FIG 3.—Average pulse-rate chart.

stationary the other 8 having subsided whereas the solitary no prontosil case in the same age group was noted as stationary.

Turning to the prontosil group as a whole a further noteworthy fact emerges. The drug was administered by mouth in all but 2 cases. Two five grain tablets of prontosil album three times daily

COMPARISON OF RESULTS

Age-group	0-5	5-15	15-30	30-50	50-65	Over 65
PRONTOSIL CASES						
Cases	2	3	8	7	6	9
Regressed	1	3	8	7	6	8
Stationary	—	—	—	—	—	1
Spread	1	—	1	—	—	—
Relapse	—	—	—	—	—	—
OTHER CASES						
Cases	—	—	3	—	6	1
Regressed	—	—	1	—	3	1
Stationary	—	—	—	—	—	—
Spread	—	—	2	—	3	—
Relapse	—	—	—	—	—	—

was the ordinary adult dose smaller doses proportionately to body weight being given to children. In two cases however—one a baby of 7 months who objected to the inclusion of the powdered tablets in his feeds, and the other an adult female of 69 who was comatose on admission and for some days later—the drug had to be administered intramuscularly in doses of 5 c.cm. The baby was the only case of spread after 48 hours recorded in the prontosil

series, and the spread was slight and of short duration the adult was the only prontosil case reported as stationary after the same period. She subsequently developed lung abscesses on both sides that on the left cleared up that on the right persisted. (A report of this case is to appear elsewhere.)

The single relapse recorded occurred in a young adult female. The attack was a moderate one and her response to treatment by tablets was so prompt that the drug was discontinued after three days. She was about to be discharged on the tenth day when the relapse occurred. This yielded so promptly to a resumption of treatment that she was actually discharged a week later. In this connexion Tonndorf cites a similar case following five days medication.

The average length of stay in hospital in the prontosil cases was 18.4 days which compares favourably with the figure of 23.8 days in the other series.

Both series were remarkably free from complications. A moderate degree of cervical adenitis was noted on admission in a number of cases. One in particular already referred to presented in addition corneal ulceration with much oedema of the lids, a severe stomatitis laryngitis and pneumonia. Pulmonary abscesses subsequently developed. There was a notable absence of toxæmia and her general condition improved so much that she was transferred to a thoracic unit for further treatment.

DISCUSSION

With the small number of cases and controls at our disposal it would be folly to dogmatise; nevertheless a few tentative conclusions may be offered.

Prontosil is of undoubted value in the treatment of erysipelas. The drug is best administered by mouth. It is necessary for the patient to receive repeated doses in order to maintain the requisite concentration and these are more easily administered by mouth than by repeated injections.

The dosage in our series appears to be adequate. It may be expected to produce a favourable result in about 48 hours—i.e. when about 60 grains have been ingested. No obviously untoward results followed from this dosage or mode of therapy. The drug ought to be persisted in for about a week. (Tonndorf suggests ten days.)

It has little or no effect on local septic lesions which may have been the starting point of the attack.

Finally, we would draw attention again to the quite remarkable results in the age group 50-65 and over, and to the fact that no spread or relapse occurred in any patient while actually taking prontosil by mouth.

We are greatly indebted to Dr D H R Harries, medical superintendent of the North Eastern Hospital, for his

permission to published details of these cases and for his help and advice in presenting them

REFERENCES

- Marshall, E K, Emerson K and Cutting, W C (1937) *J Amer med Ass* 108, 953
 Meyer Heine A., and Huguenin P (1936) *Pr méd* 44, 451
 Tonndorf (1936) *Med Klin* 32 1307

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF UROLOGY

At a meeting of this section on May 27th, with Mr BERNARD WARD, the president, in the chair, a paper on

Genito-urinary Tuberculosis

was read by Mr JAMES CARVER. It was based on 46 cases under his care in the last four years, most of which had been sent from sanatoriums, where they were having treatment for tuberculosis of urinary tract, lungs, or joints. In 28 cases the lesions were renal and in 10 they were genital. Renal tuberculosis was commonest during the second, third, and fourth decades, 1225 of 1571 cases in a recent series were between twenty one and fifty years of age. Genital tuberculosis occurred at the period of maximum sexual activity. Half the cases in which the disease was in the seminal tract had bilateral epididymitis, the second epididymis becoming involved within a year of the first, in three the testis was so diseased that castration was necessary, while in one bilateral castration had to be performed.

In tuberculosis of the kidney, said Mr Carver, the earliest symptom was frequency of micturition, the next most common was burning and scalding and hæmaturia. No one would wait nowadays for night sweats and hoarseness before sending sputum for examination, but in non sanatorium cases a surprisingly long period often elapsed before genito-urinary tuberculosis was suspected. There was need for wider recognition of the earlier symptoms, and all patients whose bladder symptoms did not improve within a reasonable time should have a complete bacteriological and urological examination. It was unwise to rely on smears alone for diagnosis, on the other hand guinea pig inoculation and cultures had proved reliable in 24 out of 26 cases of renal tuberculosis. Occasionally negative laboratory reports might lead to a wrong diagnosis—e.g., when renal occlusion was present. Briaschi, of the Mayo Clinic, reported that of 621 cases of tuberculous kidney 69 had renal occlusion. Uroselectan was valuable as a diagnostic aid, but its use should be preceded by ordinary radiography of the renal tract to find any calcareous deposits. Often excretion urography indicated which side was diseased. For cystoscopy the speaker always employed a low spinal anaesthetic. Where there was much contraction, and where it was difficult to obtain a clear medium in operating cystoscope should be used. Operation for tuberculosis of the kidney was rarely required very urgently, and everything possible should be done to raise the patient's resistance and general health beforehand, even by sanatorium treatment when this could be arranged. Patient and staff should be on the best of terms for a considerable period before operation. As an anaesthetic cyclopropane was now largely used in place of gas and oxygen, it had the

advantage that no chest complication followed its administration, and also that breathing was very quiet during the operation, and there was sufficient relaxation. The only drawback to cyclopropane in his experience was a tendency to nausea and vomiting in the 24 hours after it was given.

In his Bradshaw lecture Hugh Lett spoke of the advantages of removing the ureter when the kidney had to be removed for tuberculosis, and the speaker's choice was the same procedure. After the vascular pedicle had been divided, the kidney was pushed down towards the pelvic brim, and the wound was sewn up and drained. Then the patient was put into the Trendelenburg posture, and a subumbilical midline incision made. The kidney was delivered to the assistant, who held it vertically upwards while the ureter was being stripped down to the bladder. The ureter was clamped flush with the bladder and divided. The cut end was sealed with pure carbolic and embedded. The pelvic wound was also drained. Several writers had emphasised the importance of removing the perinephric fat, so as to avoid contamination of the operation field and subsequent breaking down of the wound. But Mr Carver thought the perinephric fat played little part in this catastrophe, in his view the causes of it were rupture of the kidney owing to rough handling, and contamination of the wound by the ureteric stump when the kidney had alone been removed. All his loin wounds healed by first intention. Urologists who did not practise nephro-ureterectomy declared that the ureteric stump was able to look after itself. But it was impossible to judge of the condition of the lower third of the ureter from a loin incision. The portions of the ureter which were most seriously involved were the upper and lower thirds.

A condition that was almost as trying to the surgeon as to the patient was tuberculous cystitis in association with bilateral renal tuberculosis, or other condition rendering operation on the kidney impossible. Diathermy had proved very successful in one case in which ulceration and hypertrophy of mucous membrane was present. Mr Carver had had no experience of such methods as injections of 6 per cent carbolic, as recommended by Rovsing, or of chloride of mercury as suggested and used by Guyon, nor of Holland's method of giving potassium iodide internally, and calomel emulsion in oil into the bladder. In carrying out epididymectomy, every effort should be made to preserve the testicle, especially in young men, small abscesses in it should be curetted in preference to castration. When, however, the testicle was severely involved, castration was necessary. In the presence of sinuses there was great danger of wound contamination and A B Cecil's extrusion operation was worth employing. The sinuses were treated with pure carbolic and a circular incision was made around them, then the incision was deepened and the tunica opened. Barney advised removal of the tunica also if it was diseased. Bumpus and Thompson reported 68 cases of genito

urinary tuberculosis in only one of which seminal vesicle disease was present. In 10 the opposite epididymis was also infected, but the seminal vesicle on that side was clear. Of a large series of fatal cases 44 per cent. were found to have died of tuberculosis of the other kidney, 35.5 per cent. of tuberculosis of the lungs and 13.3 per cent. from primary tuberculosis. In other words, 93 per cent. of the deaths were due to tuberculosis. Mr Carver considered that the poor results were largely due to an insufficient building up of the patient's resistance after operation. Patients were very reluctant to submit to prolonged sanatorium treatment especially if they had already had sanatorium régime. They disliked being away from family life, and they feared with good reason loss of employment. Lett had stated that 80 per cent. of the well-to-do recovered completely whereas in those less fortunately circumstanced workers and others the proportion sank to 55-60 per cent., which showed how large a part was played by physical vigour and resistance. Finally genito-urinary tuberculosis should not be regarded as a localised disorder but rather as a manifestation of a generalised disease. Hence the prognosis should be guarded.

DISCUSSION

Mr F E FELDEN said many denied that a renal tuberculous focus ever healed and that might be true. Nevertheless eight years ago he had a patient aged 22, with a definitely diseased left kidney and a grossly diseased right kidney who was passing urine 32 times per night. A right nephrectomy was done and when he saw her six months ago she was very fit—her weight having increased by 3 st.—and apparently comfortable never rising at night. All he had hoped in operating was to give some relief. In removing a tuberculous kidney he would insist on real sanatorium treatment for at least six months.

Mr H. P. WINSBURY WHITE said that in the cases of tuberculous epididymitis he had seen he had always found evidence of prostatic infection though he could not always prove it was tuberculous. Often such patients did not show symptoms which directed attention to the urinary tract—i.e. they might have prostatic infection but no great disturbance of micturition. A large proportion of cases of renal tuberculosis had genital infection also and this suggested that there must be an easy pathway by which the infective material could wander casually from one part of the genito-urinary apparatus to another. It was not easy to regard the infection as blood borne.

Mr HUGH LETT thought that in tuberculous epididymitis the infection was usually lymphatic. Often the testicle showed no obvious sign of tuberculous disease. It was very probable that there was a definite infection of the lymphatics of the vas. In his view once there was a closed renal tuberculosis and the other kidney was sound it was unwise to leave the infected kidneys no matter how well the patient might appear. By removing the ureter with the kidney it was possible to prevent the many distressing cases with a persistent sinus in the lumbar region and a breaking-down wound. In taking away the ureter one removed an important focus of infection which was in direct communication with the bladder. In many patients who ultimately died having had one kidney removed there was found to be tuberculous disease of the opposite kidney. It was also known that there were many patients who

died from disease of the opposite kidney which was not necessarily tuberculous disease. It might be a condition of hydronephrosis. Either the ureter was dilated along its whole extent or there was a stricture at its lower end. In the former case the cause was thought to be persistent contraction of an inflamed bladder. In that way the kidney might become the seat of tuberculosis. Even more important was the development of tuberculous disease in the lower end of the ureter on the sound side. He emphasised the importance of sanatorium treatment for these patients before as well as after operation. In recent cases the importance of bed could not be overestimated.

Mr E W RICHES agreed about the advisability of removing the ureter as well as the kidney. On several occasions he had had to remove a ureter by a secondary operation to clear up either a persistent cystitis or a persistent sinus. He thought that if clinical and bacteriological examination and excretion urography were carried out there was seldom need for pyelography. He was a believer in tuberculin. Its use often brought improvement in the condition of the second kidney when the first had been removed by operation. It was valuable to remember this seeing that many patients could not have sanatorium treatment. As to prognosis, he felt that unilateral tuberculous renal disease had a reasonably good prognosis.

Mr H V WELLS said that in prostatic trouble the infection travelled along the lumen of the vas. In a case with prostatic infection the passage of an instrument might be followed in 24 hours by acute epididymitis. In a considerable proportion of cases of tuberculous epididymitis there was no demonstrable renal lesion. A tuberculous bacilluria might be determined by a focus in the kidney which might afterwards heal.

Mr R OGIER WARD thought the general outlook on renal tuberculosis unduly pessimistic. Mr Carver's series largely composed of sanatorium cases was notable for the proportion in which there were other tuberculous lesions in the body. It was his own custom in both hospital and private practice to ask patients whether they had had disease of bones or joints and he was surprised at the small number who had. He did not often perform nephro-ureterectomy. When should it be done? If the patient had a golf hole ureter or if it was grossly diseased the ureter should come out. If a ureteric orifice moved with respiration it meant it was a rigid ureter and that the kidney was stuck to the diaphragm and the surgeon should be prepared to perform nephro-ureterectomy; and similarly if the ureter could be felt per abdomen.

Mr A E ROUTE agreed about the general undesirability of ascending pyelography for the diagnosis of renal tuberculosis. He had never tied the vas on the apparently sound side in cases of unilateral epididymal tuberculosis. His mind always ran on the possibility of a legal action for one could not swear that a particular patient was not one of the 40 per cent. in whom the disease would not have spread to the fellow testicle.

The PRESIDENT said that if there was tubercle in any other part of the body—particularly lungs, bones or joints—he held his hand until, under sanatorium or other treatment the active lesions had become quiescent or cured. Even a kidney with advanced disease was doing a considerable amount of work. If it was removed the whole of that work had to be done by the other kidney and its chance of infection was increased. As kidney operations

were not urgent, there was every opportunity for careful preparation of the patient. Moreover, tuberculosis of the kidney was not necessarily a progressive disease, it would be curious if the kidney were the only organ in the body that did not show resistance to tubercle. Once the calyces were ulcerated and the pelvis was involved, the lesions were progressive, but even cases of this type could in certain circumstances undergo cure. He did not often do pyelography, sometimes it did not teach as much as did careful examination of urine drawn off by ureteric catheter. If such urine showed pus—whether with or without tubercle bacilli—the kidney should be regarded with suspicion. If a ureter was thickened he removed it, almost throughout its length.

Mr CARVER, in reply, agreed that in established renal tuberculosis infection could spread to the epididymis, prostate, and vesicle from the urethra. He believed the infection often travelled by the blood stream, often the primary lesion was in the epididymis. When in doubt about a kidney sinus he used ascending pyelography.

BRITISH PSYCHOLOGICAL SOCIETY

Dr H CRICHTON MILLER took the chair at a meeting of this society held at the Tavistock Clinic on May 25th, when Prof WILLIAM McDougall delivered an address on the relations between

Dissociation and Repression

These relations, he said, constituted one of the fundamental problems in psychology. Both words were widely used and both were doubtless needed, they probably stood for phenomena of two different orders requiring at least two quite distinct theories for their interpretation. This view was, however, not generally accepted. The followers of Janet had as a rule no use for the concept of repression, while most of the followers of Freud, Jung, and Adler admitted no need for the word "dissociation." This continuing division of opinion might, thought Prof McDougall, be properly regarded as a symptom of the sickness of psychology—a dissociative symptom, or a disorder due to conflict and repression. It was in any case a notable instance of lack of integration of the science of human nature. Many of the more eclectically minded psychologists—who were fortunately more numerous in Great Britain than in any other country—used both words as descriptive terms and recognised the need for two corresponding theories.

Study and experience had led Prof McDougall to treat repression as a dynamic factor which in many cases prepared the way for and led to dissociation. Assisted by various friendly but vigorous opponents of his views he had gradually come to realise that he was confounding under the single term "dissociation," at least two factors which ought to be distinguished—dissociation and disintegration. The first step towards a solution of the problem must be to distinguish the various meanings of the word "dissociation" as used by various authors. Here one must bear in mind the distinguishable conditions of mental integrity or unity, expressed by the harmonious functioning of mind in its normal healthy instances. The study of the normal had been too much neglected in psychology.

A psychologist who regarded the structure of the developed mind as the product of the operation of

a single powerful principle, that of association, naturally saw in dissociation the one abiding principle of mental disorder. Some such logical principle seemed to have invaded Janet's doctrine of dissociation. Though few workers nowadays accepted the old associational doctrines, much uncertainty was felt concerning the principles which must replace or accompany association as the organising processes by which the sane mind became a harmoniously working entity. In his "Outline of Psychology," Prof McDougall had described three principles which governed his doctrine of the mind's structure. He had distinguished two great aspects of the mind's organisation. The first of these was the logical structure, corresponding to the logical relations of the cosmos in general. It grew in two ways, mainly by differentiation of germs of mental structure—mental dispositions—achieved by innumerable acts of analytical discrimination, and secondly by acts of synthetic apperception. The other aspect of mental organisation was the historical aspect, the total structure of the mind. This was built up by innumerable acts of association resulting in the formation of associative bonds between those units of structure which grew up by discrimination and apperceptive synthesis.

BREAKDOWN OF THE HISTORICAL STRUCTURE

There were therefore three distinct processes of growth and three corresponding modes of failure of development and perhaps of breakdown of the products of those three processes. The principal mode of failure for Prof McDougall's present purpose was, he said, the breakdown of the historical structure. This was what he understood by dissociation in the strict sense—an undoing or weakening of the links of association. It was illustrated by cases of complete absence of memory for all concrete facts but complete retention of the use of language and the understanding of things, so that the patient could conduct himself like a perfectly normal person, his chief trouble being that he did not know the names of things, which were attached to the things themselves by associative process. There were also cases in which the function of the logical structure of the mind was arrested. These were the cases of extreme regression in which the patient became like an unborn babe, understanding nothing. The mind was regarded, according to this view, as built up of distinguishable units of structure or mental dispositions, cognitive and conative, which underwent differentiation in various conjunctions and became smaller and larger systems, linked to one another by a multitude of associative bonds. It was a fair assumption that the structure of the mind could be validly translated into terms of neurones and cerebral structure, the mental dispositions being regarded as functional groups of neurones or systems of such groups. It was also a fair assumption that the associative links between such systems were represented in the structure of the brain. Further, mental dissociation might be assumed to involve some kind of impairment of these neural cross connexions. A further and much more questionable and speculative assumption was, however, that neural continuity was the ground of the unity of consciousness, or, in other words, that one condition of unity of consciousness was continuity of the field of energy changes going on in the brain at any one moment. In the latter form this assumption was confidently made by the representatives of the Gestalt school of psychology, and was carried to an extreme in the very questionable doctrine of isomorphism.

DYNAMIC RELATIONS OF THE MIND

In writing his *Outline of Abnormal Psychology* Prof. McDougall had he said, found it necessary to recognise a fourth kind of functional relations between various parts of the total structure of the mind—relations of dominance and subordination. These relations made of the total structure not merely a vast complex system of units all so connected that they might reciprocally influence one another but also a unity in a further and a higher sense an hierarchical system. They integrated the whole organisation of the mind and made of it a harmoniously working unity. They could not be translated like the other relations into terms of neural or cerebral structure. They were strictly dynamic relations. It was very difficult to suggest any adequate picture of corresponding relations between neural systems. These dynamic relations were essentially moral relations or at any rate mainly relations which perhaps had no neural equivalents. For this reason Prof. McDougall had felt compelled to describe the mind as made up of monads, in the sense of relatively independent psychic units. He regarded the integration of the human personality as consisting in the main and most importantly of its maintenance as one harmonious whole by this system of dynamic relations of dominance and subordination. The other structure relations he regarded as *adjutant as instrumental aids to or conditions of integration*. This system was even more important in psychotherapy than the other three.

At this point he had begun to connect the theory of dissociation with the theory of repression. To reconcile and combine the first three systems with the fourth was a fundamental problem and the difficulty of doing so was the chief barrier which still divided psychologists into those who thought of a neurotic disorder chiefly in terms of dissociation and those who thought of it chiefly in terms of repression. Both ways of thinking were right and to combine them only required that certain assumptions should be boldly and consistently carried through. A great army spread over a wide front consisted of many units each with its own internal organisation organised in turn within larger units. These units corresponded to the mental systems or dispositions. Connexion between the units of an army was maintained by a multitude of field-telephone wires. These represented the historical associative structure of the mind which linked up all the mental dispositions. So long as the military units maintained their normal internal organisation and the telephone system was in good condition the various parts of the army were in touch with one another and the army was a whole. A general failure of the telephonic system through a weakening of the electrical supply would correspond to the general relative dissociation of cerebral hemispheres which took place in sleep, hypnosis, fatigue and intoxication. Serious impairment of the lines or receiving instruments of one unit would represent local cerebral dissociation cutting out one special function or group of functions.

DISINTEGRATION WITHOUT DISSOCIATION

The more effective functioning of the telephonic system did not, however, make the army a whole in the higher sense. The telephone wires might carry information about the activities of each unit but they might also carry mere gossip or argument. The higher form of unity in a vastly complex system was best and perhaps only attained and maintained by the organisation of an hierarchical system of

dominance and subordination over and above all the telephonic intercommunication. The telephone system might be working perfectly while the whole army was in a state of complete anarchy. Similarly the associative mechanism of the mind might be unimpaired while the mental integrity was broken down through a failure of the dynamic relations of dominance and subordination. There was disharmony without dissociation.

Relations of this sort were fundamental in the social system even in that of animals. Their extreme and true prototype was the relation between the hypnotist and his subject. There was no physical compulsion but a purely moral compulsion or influence which nevertheless was highly effective. Prof. McDougall did not think that the dynamic relation ship was maintained by the mechanisms of association. Two other possibilities suggested themselves. In an army headquarters might control all subordinate systems by a special set of telephone wires or by wireless. Similarly these dynamic relations might be maintained in the mind by means of special associational links or by a telepathic or direct connexion. Critics who found this hypothesis too speculative might be able to entertain that of special nerve paths or fields of energy not confined to the substance of the neurones.

The next question which arose was how the authority of one part of the mind over the others was attained. The status of a warrior king depended only in small measure on his own qualities and much more on tradition, heredity or custom. He symbolised and controlled the energy of the whole system and could bring it to bear in or against any part. The organisation of an army which rested ultimately on the same principles provided a close analogy with the hierarchical organisation of the mind.

Dissociation therefore resulted from failure of the associative mechanism or structure of the mind. Conflict and repression were disorders of the dynamic or moral relations between dominant and subordinate parts of the mind and led not merely to dissociation but to disintegration. It might be better to use the term disharmony to describe the disorder of the dynamic relation and to reserve the term "dissociation" for cases in which both the structural and the dynamic systems of relations were disordered when conflict and repression had led to severe dissociation perhaps amounting to multiple personality. In many of the graver disorders these fundamental forms of breakdown were certainly combined. In an army a single unit might lose touch with the main body through breakdown of its telephonic communication; this was simple dissociation as in simple amnesia, anaesthesia and paralysis. Secondly the unit might refuse to obey orders; this was conflict. Thirdly the opposition of the unit might be overwhelmed and nullified by superior force; this was repression. Fourthly the rebellion might result in breakdown of communications so that the rebels were isolated. In the body a rebellious unit might be isolated physically as well as morally; here repression had led to dissociation with consequent disintegration. The isolated unit might continue to struggle against the superior force as best it could from time to time.

In conclusion Prof. McDougall said that he accepted the concept of general relative dissociation of the brain and of localised cerebral dissociations underlying various functional defects. He distinguished however between disharmony and disintegration the latter of which in many cases involved dissociation as a secondary result of conflict and repression.

REVIEWS AND NOTICES OF BOOKS

The Facial Neuralgias

By WILFRED HARRIS, M.D., F.R.C.P., Consulting Physician to St Mary's Hospital, and Physician to the Hospital for Epilepsy and Paralysis, Maida Vale London Humphrey Milford, Oxford University Press 1937 Pp 105 7s 6d

In this little book Dr Wilfred Harris surveys his vast experience which now extends over nearly 30 years in the treatment of the many varieties of pain in the face. The style of writing, which amounts almost to a collection of aphorisms, will prove to be of the greatest value and delight to those who already know something about the difficulty of interpreting and treating facial neuralgia, the uninitiated may find it necessary to revise their knowledge not only of anatomical landmarks but of nerve distributions before they seek clinical information from this book and even then may fail to appreciate the significance of the brief comments made on the various kinds of pain. The great clinician often makes up his mind by intuition rather than by reasoning, and it may be difficult or even impossible for him to explain exactly how he assesses certain factors, especially the psychological ones, in any given case. This difficulty is greatest when symptoms are all he has to go upon, and the book shows how even the very elect may sometimes be deceived.

However vague may be our conception of their underlying pathology we must recognise Dr Harris's outstanding contribution to the treatment of the facial neuralgias, of which only trigeminal tic is described in detail. He gives many examples of the beneficial effect of alcohol injection for other conditions besides true trigeminal tic, and he also mentions contra indications to its use. It is not possible to teach in writing the master's touch, and though we can find from Dr Harris's directions the point on the face at which the needle should be inserted, it is only by practice that we may hope to know where it ought to go. The book necessarily shows us what can be done rather than how to do it, and it leaves us deeply impressed.

Accidents and Their Prevention

By H. M. VERNON, M.A., M.D., Member of Technical Advisory Board, National Institute of Industrial Psychology London Cambridge University Press 1936 Pp 336 15s

THE earliest studies of the incidence of accidents in industry showed that some persons were more liable than others to have accidents, and to this phenomenon Eric Farmer applied the term "accident proneness." Accident prone people make up about 25 per cent of the population, and this group accounts for about 75 per cent of all accidents. Another 25 per cent of the population are considered to be accident free, whereas the remaining 50 per cent account for about 25 per cent of all accidents. The doctrine of accident-proneness is still contested by a number of practical works managers in charge of large groups of workmen, but from a statistical point of view it is becoming almost an axiom. Dr Vernon's method of approach to the problem of accident prevention is largely a statistical one. His book contains among other things a comprehensive review of the work and reports of the Industrial Health Research Board to which he has himself made valuable contributions. As he says, "everyone

must be acquainted with persons who are clumsy with their hands, and are liable to break almost every article they touch. It is generally assumed that their accident liability is due to sheer carelessness and lightheartedness, and that they could 'easily' avoid it by taking more thought and care." But some persons retain this liability to accidents under all circumstances, it is associated with a greater tendency to stay away from work on account of illness, and is observed more often amongst unskilled than among skilled workers. In industry a reduction in the frequency of accidents has resulted from the removal from dangerous occupations of persons judged to be accident-prone, but it is not always easy to identify them. Psychological tests devised for the purpose have not proved entirely satisfactory, and Dr Vernon does not seem hopeful that they ever will be, but it is encouraging to learn that accident-proneness can be largely overcome by instruction and training.

The practical man is more ready to accept the view that any factor which lowers the general health tends to increase the liability to accidents, though it is difficult to obtain tangible evidence in its support. Fatigue and the taking of alcohol tend definitely to increase accident liability. Good environmental conditions, such as comfortable air temperatures, well lit workrooms, and a reasonable rather than rushed speed of production, all influence the accident rates favourably. The influence of night work on the accident rates is less obvious, but Dr Vernon cannot doubt that night work is less suited than day work to the physiological rhythm of the human organism. He discusses road accidents at some length in the light of analyses of their incidence, and this section of his book is worthy of serious study by those interested in the preservation of their own lives and those of their fellow men. His main conclusion in relation to the prevention of accidents in general is that the most important measure is to educate the people of all ages and classes and to instil in them a safety habit of mind.

The Lung

By WILLIAM S. MILLER, D.Sc., M.D., Emeritus Professor of Anatomy, University of Wisconsin London Baillière, Tindall and Cox 1937 Pp 210 34s

DURING his long and productive career as an anatomist Dr Miller has perhaps done more to elucidate the finer architecture of the lung than any other investigator. His own contributions, embodying work published during five decades, bulk large in this monograph, but they are modestly woven into accounts of other people's work in such a way as to provide a complete and well proportioned story. Probably Dr Miller's greatest single contribution to the subject has been in demonstrating the morphology, topography, and function of the intrapulmonary lymph channels and depôts. This vastly important system of delicate lymphatics is here delineated in amazing detail. The finer divisions of the air passages, the ramifications of bronchial musculature, and the terminations of pulmonary blood vessels and nerves are also effectively represented. The structural obscurities of the lung have not even now been finally cleared up. The author is, indeed, at pains to show the need for further research in several subdivisions of his subject. He has himself set down a few conclusions which may not escape challenge. Most

readers will probably accept his dictum that the 'interalveolar pore' is only an artefact and will regard as conclusive his demonstration of a continuous lining membrane within the alveoli, but they may not agree that this membrane is necessarily epithelial. Some will be disappointed that greater attention has not been given to cytological detail for instance the common mononuclear phagocyte is barely mentioned. Unquestionably however the work as a whole will meet with widespread appreciation. It is a monumental treatise unique in its field.

British Encyclopædia of Medical Practice

Vol. III. By Various Authors. Under the general editorship of Sir HUMPHRY ROLLESTON Bart. GVO KCB M.D. D.Sc. Emeritus Professor of Physic, Cambridge. With the assistance of Prof. F. R. FRASER, M.D. F.R.C.P. Prof. G. GREY TURNER, M.B. F.R.C.S.; Prof. JAMES YOUNG DSO MD F.R.C.S. Sir LEONARD ROGERS KCSI F.R.C.P. F.R.C.S. F.R.S. and F. M. R. WALSH, OBE M.D. D.Sc., F.R.C.P. London: Butterworth and Co. 1937. Pp. 681. 35s.

CONTINUING its exhaustive survey of the entire field of modern medical practice, the third volume of this work opens with an article on cataract by Sir Stewart Duke-Elder and ends with one on diseases of the diaphragm by John D. Comroe. Some of the articles dealing with rare, obscure or tropical diseases will be of interest mainly to the specialist but others provide plenty of material useful to the general practitioner. In the forefront of these is Sir Arthur Hurst's article on constipation wherein he continues to fight the good fight against the widespread habit of taking purgatives. His wise words might well be taken to heart by those inside as well as outside the profession: 'The vast army of hypochondriacs who are never happy unless their stools conform to an ideal which they have invented for themselves can be cured only by making them realise that faeces have no standard size shape consistency or colour; they may then be ready to follow the example of the dog rather than that of the cat and never look behind them.' Two other important articles, one on coma by Sydney Smith and W. Ritchie Russell and one on concussion and compression by L. R. Broster should help in many a situation where differential diagnosis is both vital and difficult. If W. Gordon writes on the less momentous subject of chilblains he summarises the modern methods but offers no royal road to success in the treatment of this tiresome and common minor malady. Discussing the treatment of the common cold A. H. Douthwaite does suggest a new remedy unfortunately not yet available to the many—to fly for half an hour at a height of 8000 ft. In his article on coliform bacillus infections Clifford Morson details the uses and limitations of mandelic acid therapy. Chassard Moiré's article on pelvic cellulitis however must have been written before protosol was introduced in the treatment of cases streptococcal in origin.

An interesting and significant innovation in a work of this kind is the inclusion of a sound and well tabulated article on contraception by C. P. Blacker and Joan Mallowe who point out (1) that lactation offers very poor protection against pregnancy and (2) that pregnancy may occur after the menopause even several months after menstruation has ceased. The only contraceptive methods recommended are those in use at recognised birth-control clinics and

to protect himself against the extravagant claims made for proprietary contraceptives the practitioner is urged to write to the National Birth Control Association for a list of the more efficient productions on the market. Pediatrics is represented by several articles. Kenneth H. Tallerman and Alice Campbell Rose write on child health and welfare and Reginald Miller on colic disease. Writing on child guidance William Moodie in discussing importance to children of a sympathetic environment observes drily that when dealing with cases of child delinquency it is sometimes among the parents rather than among the children that the real patient is to be found. In the sphere of gynaecology M. J. Stewart and Alan Brevin write on chorionepithelioma and hydatidiform mole and James Young collaborates with the general editor in an article on the climacteric and its disorders. Various dermatological conditions common and uncommon receive attention ranging from the homely corn and bunion by W. J. O'Donovan through various types of dermatitis by Arthur Whitfield and P. B. Mumford, to the redundant crawl-crawl by Sydney Thomson. F. M. R. Walsh contributes three articles on cerebellar disease, cerebral plegia and cranial nerve affections and F. W. Watkinson Thomas two on deafness and deaf mutism. There are also two valuable articles on teeth one by Alan Moncrieff on dentition and one by Sir Norman G. Bennett on dental sepsis in relation to systemic disease. The volume which contains in all 68 articles by recognised authorities is well up to the high standard set by its predecessors.

Practical Orthoptics in the Treatment of Squint

By KEITH LYLE, M.A. M.D. F.R.C.S. Assistant Surgeon Royal Westminster Ophthalmic Hospital; Ophthalmic Surgeon Metropolitan Hospital London and STYLIA JACKSON B.R.N. Senior Orthoptist Royal Westminster Ophthalmic Hospital London. H. K. Lewis and Co. 1937. Pp. 212. 12s. 6d.

THE comparatively recent institution of a diploma in orthoptic training for squint (conferred by the Council of British Ophthalmologists on the advice of a specially appointed board of examiners) has created a demand for text books dealing with this subject. The volume under review has been written with a view to meeting this demand and on the whole it fulfils its purpose in that it supplies an elementary introduction to orthoptic training suitable especially for students. The book is easy to read and gives straightforward and comprehensible descriptions of instruments and methods of examination and treatment. If these are somewhat lacking in detail they are no doubt intended to be supplemented by practical work on the part of the student. In spite of their disclaimer in the preface the authors have not altogether succeeded in avoiding the introduction of controversial matter and it seems regrettable from the point of view of the student at any rate that other principles of treatment besides those approved of at the Royal Westminster Ophthalmic Hospital have not at least been mentioned. The allocation of 40 pages—nearly a fifth of the book—to tabulated results is perhaps rather out of keeping with the character of the work nor does the evidence supplied by these tables always seem to bear out the generalisations in the text. The final chapter on ocular torticollis is the most interesting section in so far as ophthalmologists as distinct from students of orthoptic training are concerned.

GENERAL MEDICAL COUNCIL

SUMMER SESSION, MAY 25TH-29TH, 1937

ON Tuesday, May 25th, the Council commenced the hearing of cases in which certain registered dental and medical practitioners were alleged to have committed infamous conduct in a professional respect, or to have been convicted of criminal offences by courts of justice. In accordance with custom, the Council heard these cases in public and deliberated upon their decision in camera, the public were readmitted to hear the decision announced.

Penal Cases reported by the Dental Board

The Case of William Laird, registered as of 40, Gray's hull, Bangor, Co. Down, Dentists Act, 1921

Mr Laird was reported by the Dental Board of the United Kingdom for systematically canvassing for patients in November, 1936. He did not appear in answer to his notice and was not represented. The Council directed the Registrar (Mr Michael Heseltine) to erase his name from the Dental Register.

The Case of James Sharples Hopwood, registered as of 75, Flinton road, Urmston, Lancs, Dentists Act, 1921

Mr Hopwood was reported by the Board for wrongfully obtaining payment from two approved societies of £4 3s., and £4 11s. 8d., by means of untrue and improper certificates in dental letters falsely stating that certain dentures had been supplied and remade. He did not appear and was not represented. Mr Harper, the Board's solicitor, read a statement forwarded by the respondent in mitigation of his offence and pleading severe domestic trouble. The Council directed the erasure of his name.

The Case of Albert Edward Lloyd, registered as of The Bungalow, North Drive, Cleveleys, Blackpool, Dentists Act, 1921

Mr Lloyd had also been found guilty by the Board of obtaining £3 6s. 6d. in 1934 from an approved society by means of untrue and improper certificates for a denture which he had not handed to the member, this case was reported by the Minister of Health. He had moreover been found by the Board to have undertaken in 1936 the repair of an insured person's denture although he was not qualified to do dental benefit work, and to have retained the denture until the member should pay him the sum which the society would have paid him if he had been so qualified. He did not appear and was not represented. The Council ordered his name to be erased.

The Case of John Kennedy Scotland, registered as of 15, Millbrae crescent, Langside, Glasgow, L.D.S.R.F.P.S. Glasg. 1923

The Board reported that Mr Scotland had been convicted on Oct. 20th, 1936, before the Sheriff Court of Linlithgow at Glasgow, of presenting to various chemists on 20 occasions between May 28th and Sept. 29th 1936, fabricated prescriptions and obtaining from them quantities of morphine sulphate which he had not been duly authorised to procure contrary to Regulation 2 of the Dangerous Drugs (Consolidated) Regulations 1928, and had been fined £10 or 60 days imprisonment in default.

Mr Scotland did not appear and was not represented but Mr Harper read a statement which he submitted in extenuation of his offence. The Council ordered the erasure of his name.

The Case of Edwin Spencer Tebbutt, registered as of 30, Finsbury square, London, E.C.2, L.D.S.R.C.S. Eng., 1905

Mr Tebbutt had been convicted three times of drunkenness. He did not appear, but a personal friend applied for permission to be heard on his behalf, and was allowed to address the Council and lay before it his statement in mitigation, pleading prolonged ill health and financial loss. The Council directed the Registrar to erase his name.

RESTORATION TO DENTISTS REGISTER

After deliberation in camera the President announced that the name of Thomas Ross Graham had been restored to the Register.

Charges against Medical Practitioners referred from Previous Sessions

The Case of William Mervyn Crofton, registered as of 22, Park square, London, N.W.1, M.B., B.S. 1904 R.U. Irel., M.D. '1911, N.U. Irel., who had been summoned to appear before the Council in 1935 on charges of advertising based on press interviews and speeches eulogising the Antigen Laboratory with which he was connected. The Council had found some of the facts proved but had postponed judgment until this session.

Dr Crofton appeared, accompanied by Mr G.W. Pritchard, solicitor. The Medical Defence Union, which had complained, was not represented. The Council considered the testimonials produced by respondent and decided not to erase his name.

Dr Crofton then accused the Council of heinous and unprofessional bias and put in a formal written complaint of their conduct of the case.

The Case of William Douglas, registered as of 282, Goldhawk road, Shepherd's Bush, London, W.12, M.B., Ch.B. 1921, U.Edin., who had been summoned on charges of driving a car while under the influence of drink. The Council had found the charges proved in May, 1936, but had postponed judgment for a year. Dr Douglas appeared, and had submitted the required testimonials. The Council decided not to erase his name.

The Case (adjourned from May 26th, 1936) of David Davidson Watson, registered as of c/o Haigh, 21, King street, Wakefield, M.B., Ch.B. 1926, U.St. And., who had been summoned to appear as a result of convictions for driving a car while under the influence of drink. Dr Watson attended, having submitted testimonials. His name was not erased.

The Case (adjourned from Nov. 25th, 1936) of Walter Campbell, registered as of 59, Jeffroy street, Edinburgh, L.R.C.P. Edin., 1927, L.R.C.S. Edin., 1927, L.R.F.P.S. Glasg., 1927, who had also been convicted of motoring offences and of being under the influence of drink. Dr Campbell had not appeared and the Council's solicitor had not been able to trace him. Dr Campbell again did not appear. Mr Harper outlined the steps he had taken to trace him. After deliberation in camera the Council decided to proceed with the case. The charges were as follows—

That you were convicted of the following offences: (1) on Dec. 12th 1931 at the Sheriff Court, Cupar of being in charge of a motor-car whilst under the influence of drink and were fined £5 or thirty days imprisonment. (2) on Dec. 17th 1931, at Dunfermline Police-court of causing a motor-car to stand longer than was necessary for loading or unloading goods or for taking up or setting down passengers, and were fined 25s. or ten

days imprisonment; and of the following misdemeanours: (3) on August 20th 1935 at the Hull City Police-court of driving a motor-car without due care and attention, and were fined £15 and £3 13s 6d costs, or fifty-one days imprisonment; and were disqualified from holding a driving licence for one month; and (4) on Sept 1st 1936, at the Leeds West Riding Court: (a) of driving a motor-car whilst under the influence of drink (date of offence August 16th 1936) and were fined £15 and £5 16s costs or two months imprisonment in default; and were disqualified for holding a driving licence for twelve months; (b) of driving a motor-car in a manner dangerous to the public (date of offence August 16th 1936) and were fined £10 or one month's imprisonment in default.

Mr Harper described the cases in detail and after prolonged deliberation in camera the President announced that the charges had been found proved, but judgment had been postponed for six months subject to the usual proviso Dr Campbell would be well advised to attend next session.

The Case (postponed from Nov 25th 1936) of *Ernest Stanley O'Sullivan* registered as of 12 Dunowen gardens, Cliftonville, Belfast L. L.M. 1928 R.C.P. Irel.; L. L.M. 1928 R.C.S. Irel. who had been summoned to appear before the Council on the following charge—

That you were convicted of the following misdemeanours, viz.: (1) on June 12th 1933 at the Stockton Borough Police-court of being under the influence of drink whilst in charge of a motor-car and were fined £5 and £1 1s doctor's fee (date of offence June 8th 1933) (2) On May 14th 1936 at the City Police-court Newcastle-on-Tyne (a) of driving a motor-car whilst under the influence of drink, and were fined £10 and £9 7s 6d. costs (date of offence May 13th 1936) (b) of driving a motor-car in a manner which was dangerous to the public, and were fined £2 (date of offence May 13th 1936) and (c) of using a motor-car when the brakes were not in good and efficient working order and were fined £1 (date of offence May 13th 1936); to all of which you pleaded guilty

At the meeting of the Council on Nov 25th 1936 the solicitor to the Council had stated that he had been unable to establish communication with Dr O'Sullivan or to serve the notice of inquiry upon him. The solicitor had accordingly applied for the adjournment.

Dr O'Sullivan now attended accompanied by Mr Oswald Hempton solicitor on behalf of the Medical Defence Union Mr Winterbottom solicitor to the Council put in reports of the convictions and gave details. Mr Hempton addressed the Council giving it Dr O'Sullivan's assurance that he now was and would remain a total abstemious Respondent had he said, been extremely worried and unfit at the time of the convictions. He put in a number of testimonials. Judgment was postponed for a year.

New Penal Cases

The Case of David William Jones registered as of 10 Belaxe lane, London N.W.2 M.R.C.S. Eng. 1914 L.R.C.P. Lond 1914 who had been summoned to appear before the Council on the following charge:—

That you were on Oct 23rd 1936, convicted at the City of Birmingham Police-court of the following misdemeanour—viz. of obtaining credit to the amount of £90 & 6d from the London Midland & Scottish Railway Company by fraud and were sentenced to four months imprisonment in the second division and that your appeal on Dec 1st 1936 against the conviction to the Birmingham Quarter Sessions was dismissed.

Mr Harper explained that the offence had consisted of allowing a lady with whom respondent was living

to issue a "dud" cheque in payment of a hotel bill; the lady had been sentenced to a month's imprisonment at the same time and had said in cross-examination that respondent had had nothing to do with the cheque. Both she and respondent had persistently stated that she had assets.

Dr Jones asked if the lady's evidence might be heard in camera. Mr Harper suggested calling her Mrs Jones. Dr Jones said he could not call her unless she were heard in camera. The Council then went into camera after which the President announced that the Council would postpone judgment until May 1938 subject to the usual testimonials.

ALLEGED CARELESS CERTIFICATION

The Case of Joseph Shibko registered as of 5 Prince of Wales-road, Swansea L.M.S.S.A. Lond. 1926 who had been summoned to appear before the Council on the following charge—

That being a registered medical practitioner you on each of the following dates namely Jan 24th April 11th May 6th and Dec. 17th 1936 signed and issued a certificate of incapacity for work for a person described as William Ward whereas you had not seen or examined the said William Ward on any of such dates or at all which certificates were untrue misleading and improper. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

There was no complainant in this case.

Dr Shibko attended accompanied by Mr W. A. Macfarlane counsel instructed by Messrs. Le Brunswear and Oakley solicitors on behalf of the London and Counties Medical Protection Society.

Mr Harper solicitor to the Council said that respondent had never seen Mr Ward, who was in perfect health and at work all the time his wife was sending in certificates of incapacity supplied by respondent. Respondent, when asked for explanations had replied by his solicitor stating emphatically that the certificates had been given by the doctor to Mr Ward or to someone representing himself to be Mr Ward, and the doctor had never at any time given a certificate without seeing the patient.

Mrs W. M. Ward testified to her statutory declaration stating that she had asked at the surgery for a certificate showing that her husband was unable to work and had been given it without comment or fee. The certificates were produced. She had not mentioned any disease and had not been asked. Her husband had never been to the surgery with her and Dr Shibko had never been to their house. She had also received National Health certificates but had destroyed them. In cross examination she agreed that her husband was not a patient of Dr Shibko. She had seen the book he took the slips from but had seen no counterfoils. The five insurance certificates were at quite different times from the others. The doctor had not asked for any particulars of her husband's number or anything. The certificates had been used to obtain relief in June 1935. Her husband had never had a day's illness. She had been convicted of receiving £33 odd in relief and had been to prison for it. She had not offered or been asked for any suggestion at any time as to what was the matter with her husband. She had simply said she wanted a certificate for him and Dr Shibko had written it without a word more. Shown a blank certificate form she said she had never seen such a form before. She did not know that the other form which she recognised was the form for giving to an employer. She knew that respondent was the poor law doctor for the district. She had told a good many lies in her time but this was the

truth She had never noticed if there was any number on the certificates On the one occasion when the relieving officer had called at the house, she had told him he could not see her husband because the parson was in, this had been untrue She had not had certificates for her daughter The relieving officer had read the certificates She had never sent anyone else to the surgery, nobody but herself knew anything about it She had never paid anything

In reply to the legal assessor, she said she had pleaded guilty at the court

Sir Kaye Le Fleming asked what the National Health certificates were wanted for, witness said nobody had asked for them, but she had shown them to the relieving officer until he had ceased to be satisfied with them

Mr W Ward testified that he had not for nine years lost a day's employment through sickness or been attended by any doctor He had never seen respondent until they met in the police court He knew nothing about any certificates After the police proceedings respondent had come up to witness at the bus stop and twice said he thought he had seen witness in his surgery, witness had twice said "You're a liar"

Cross-examined, he said he himself had obtained poor relief in 1935 and had himself been to the relieving officer for it He knew his wife was on Dr Shibko's list for the Public Medical Service, but did not know how many weeks she had actually paid

Dr Shibko testified that he was public assistance medical officer for Swansea No 3 district, and had been interested in local government work before going there He had a panel practice of some 1800 patients and participated in the public medical service for non insurable persons with an income below £250, having some 300 families on his list In addition, he had a substantial private practice The relieving officer could aid destitution without reference to the medical officer, but when sickness was involved a special form was used (This was the form Mrs Ward had never seen) He invariably used that form, there should be a query by the relieving officer if any other form were used The other form (that on which the certificates had been given) was used only for private purposes—e.g., for a friendly society, or for an employer—and he always used the right form for the right thing He admitted that the certificates in question had been signed by him, but he had never given one to Mrs Ward or signed one without examining a man He did not know Mr Ward personally, 800 people might pass through his surgery in a week and it was impossible to call for evidence of identity He believed he had seen Mr Ward and spoken to him in December, discussing why he should visit a surgery three and a half miles from his home He was firmly convinced that it was William Ward and if not, it must have been someone strikingly like him He was certain that he had made it an invariable and inviolable rule never to give a certificate without seeing the patient He well knew the consequences of giving false or misleading certificates When he gave N H I certificates he used a book with numbered counterfoils, and he always filled in the counterfoils, employing a clerk to make records from them He had thought he had a fraud-proof system, but since the police-court proceedings had taken steps to tighten it up still further He could recall nothing about the first three certificates, but had some recollection of the fourth His written records of

Jan 4th, 1936, showed that he had not seen Mrs Ward's elder daughter then, for he had only issued an infant's cough mixture The adult daughter had first been seen on April 17th, 1936, for a rash on the shoulder, she had complained of nervous trouble in September, 1936 He also produced records of attendance by Mrs Ward with her children of school age It was not his custom to charge for certificates of inability to work if no treatment was given

Cross examined, he said he knew Mrs and Miss Ward by sight well and had thought he knew Mr Ward also He took no steps to confirm the identity of his patients He was certain that Mrs Ward had never come to the surgery with her husband.

Witness answered questions by Dr J W Bone, saying that his recollection of his interview with Mr Ward in December was that he came as a panel patient He had no record of treatment for the brachial neuritis and bronchitis which had then—according to the certificate—rendered him unfit for work. If the patient asked for a certificate for an employer, it was now his custom, but had not then been, to ask for the panel card or look for the record card, and he might not give any treatment In reply to Mr H L Eason, he said he kept no records of patients to whom he gave such certificates, there was no evidence whatever that he had ever seen this man

In reply to the legal assessor, he said he had taken no steps to ensure that the patient really was on his panel. Anyone could walk into his surgery and get a certificate, if they said they were on his panel he believed them The certificates in question had been made out by him during surgery hours

In reply to Sir Robert Bolam, he said he had been in panel practice since 1926

Mr Macfarlane read testimonials to character and called the Swansea relieving officer, Mr Leonard Williams, who stated that he had been there since October, 1935 At that time, and ever since, Dr Shibko had been poor law medical officer A N H I certificate was not accepted by him, except pending the production of the proper poor law certificate The four certificates relating to Mr Ward had been handed to him and he had in fact paid out relief on them Since the police court proceedings he always demanded the proper certificate He had a high opinion of Dr Shibko's carefulness

In reply to Mr Harper, he said he would pay two or three hundred people in two hours and he could not give any detailed recollection of other intermediate certificates

In reply to the legal assessor and members of the Council, he said similar certificates from other doctors had been accepted and paid on without inquiry He had demanded no other certificate between May and December The average practice was for applications for relief to be made by the wife The case had been visited on May 13th although relief had been paid ever since January on a certificate of Dr Shibko's His assistant might have paid other, unrecorded, visits, he himself had never called on the Wards Certificates were not required weekly but only intermittently, as required Personation would be quite possible and no steps were taken to establish identity He would accept the word of a wife that the husband was not fit to make application, Mrs Ward had made such a statement to him

Mr Macfarlane and Mr Harper briefly addressed the Council, and the President announced that the facts had not been found proved to the satisfaction of the Council

ADULTERY WITHOUT ERASURE

The Case of Bardwell Edden Tenson Mosse registered as of 13 King-street King's Lynn M.R.C.S Eng., 1926 L.R.C.P. Lond. 1926 who had been summoned to appear before the Council on the following charge —

That being a registered medical practitioner (1) you committed adultery with Ethel Gregory Johnson a married woman, of which adultery you were found guilty by the decrees of the Probate Divorce and Admiralty Division (Divorce) of the High Court of Justice dated Nov. 2nd 1930 and made absolute on Dec. 21st 1930 in the cases of *Johnson v. Johnson* and *Mosse and Tenson Mosse v. Tenson Mosse* in which you were the co-respondent and respondent respectively. (2) you stood in professional relationship with the said Ethel Gregory Johnson and/or her husband Philip Henry Hildon Johnson. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

Dr Mosse was accompanied by Mr Macfarlane instructed by Messrs. Le Brasseur and Oakley on behalf of the London and Counties Medical Protection Society. Mr Winterbottom read extracts from the divorce proceedings, in which it had been stated that Mrs Johnson was a patient of Dr Mosse. Professional attendance was admitted. In 1929 there had been six attendances on Mrs. Johnson in November and December and there had been uninterrupted attendance on both Mr and Mrs Johnson from then until June 1935 ending with 26 calls on Mr Johnson in January 1935 and on Mrs Johnson two in January two in February four in March three in April and one in June. Three later alleged attendances were not admitted by respondent.

Mr J. A. Parsons solicitor to the respondents previous partnership testified that a monthly book of visits was in the handwriting of Dr Mosse and found in it entries of visits to Mr Johnson on August 1st 1935 and Sept. 4th 1935. He also identified a daily record ledger and an entry in it on August 29th 1935 of attendance on Mr Johnson.

Cross-examined he said the partnership had been dissolved by transfer from Dr Mosse to an incoming partner on Sept. 23rd 1935.

Dr Mosse testified that there had been no adultery whatever before February 1936.

Adultery before that date had never been alleged against him. Since leaving King's Lynn in September 1935 he had not practised medicine but had been selling cars. He had written to the registrar because he was hoping to start practice again and had a partnership in view. He did not wish to enter partnership until an inquiry had been held and the matter settled. He had taken the initiative in the inquiry. He had first met the Johnsons socially when doing a locum for his brother in Norfolk; they had not been patients of his brother. Later he had joined a partnership in King's Lynn and the Johnsons were patients of the partnership and he had attended them. The former Mrs Johnson was now his wife. He had first married in 1929 and the marriage had not proved successful. He had never committed any kind of misconduct or familiarity during the period when he was practising. He had first realised his feelings in July 1935 and had forthwith told the lady that he could never attend her or her husband again and that he must see the husband about it. He had immediately put his practice up for sale. Referring to the entries in the daybooks he said he had not attended Mr Johnson on those days but had entered the consultations in the book because it had been the custom to copy entries into the book from a piece of paper. The doctor consulted did not neces-

sarily make the entry. Until a few days ago he had not known of the attention received by Mr Johnson at that time. Mrs Johnson had needed medical attention in September 1935 but he had not attended her in any way.

Mrs. Ethel Gregory Mosse, formerly Mrs Johnson testified that she had been a patient of the partnership and confirmed Dr Mosse's account of the relationship. There had been no adultery before February, 1936.

Mr Macfarlane and Mr Winterbottom addressed the Council and the President announced that the Council had found the alleged facts proved to their satisfaction but had not adjudged Dr Mosse to be guilty of infamous conduct in a professional respect.

CONVICTIONS FOR DRUNKENNESS

The Case of William Dale Lawton registered as of 80 Princess road, Moss Side Manchester L.R.C.P. Edin. 1903 L.R.C.S. Edin. 1903; L.R.F.P.S. Glasg. 1903 who had been summoned to appear before the Council on the following charge —

That you were convicted of the following misdemeanours — viz.: At the Stockport County Petty Sessions: (1) on August 17th 1922, of obstructing the highway by leaving a motor-car thereon without lights, and were fined £1; At the Manchester City Police-court: (2) on June 2nd 1925: (a) of being drunk whilst in charge of a motor-car and were fined £2 (b) of driving a motor-car in a manner dangerous to the public, and were fined £20 and licence suspended for six months (3) on Sept. 5th, 1927 of driving a motor-car in a manner dangerous to the public and were fined £1 and disqualified for holding a driving licence for two years (4) on Oct. 12th, 1930 of being drunk, and were fined 5s; (5) on Dec. 16th 1930, of being drunk, and were fined 10s (6) on Dec. 31st 1930 of being drunk, and were fined 10s or seven days imprisonment.

Dr Lawton was accompanied by Mr Oswald Hempson, solicitor.

Mr Winterbottom asked leave to add before charge (2) a further charge based on a conviction before the Manchester City Police-court on Jan. 20th 1922 for being drunk in charge of a motor-car with a fine of £2. He added details of the convictions. A Warning Notice had been sent in October 1925.

Mr Hempson said that his client was 75 years old and had been in his present practice for 33 years. He could not give an undertaking of total abstinence as that step might be prejudicial to his health, but he was only keeping the practice alive for his son, who was taking his final examinations this summer and for whom he could make no other financial provision. Testimonials were read and the President announced that judgment would be postponed for twelve months subject to the usual proviso.

A CHARGE OF FALSE PRETENCES

The Case of Alfred Edward Vawser registered as of Redcot March Cambs L.M.S. & A. Lond. 1923 who had been summoned to appear before the Council on the following charge —

That you were on April 4th 1936 after pleading guilty convicted at the Uxbridge Petty Sessions of having obtained from Messrs Waddington & Sons by means of false pretences two diamond rings of the value of £52 with intent to defraud and were sentenced to two months imprisonment in the second division and that your appeals on May 18th 1936 and Oct. 30th 1936 to the Middlesex Sessions and to the High Court of Justice respectively were dismissed.

Dr Vawser was accompanied by Mr Oswald Hempson solicitor.

Mr Winterbottom read newspaper accounts of the proceedings. Respondent had taken two rings on approval and had pawned them for £10 each. He had pleaded guilty, expressed sorrow and offered restitution. While in the R A F in Iraq he had had a severe motor crash which had left him with a tendency to muddle headedness.

Mr Hempton pointed out that the appeals had been dismissed on the technical point that respondent had pleaded guilty. Had he been legally advised at the time he would not have made such a plea. From first to last he maintained that all he had pleaded guilty to was pawning rings that were not his property. He had never been charged before, and was liable to muddle headedness, he had failed to appreciate the subtle legal definition of false pretences. Credit had been given him because he was known and was an officer in the R A F, he had done nothing to induce credit. He had given his own name and address, and had been in uniform. He had wanted to give the rings to his wife, who was very ill, after a miscarriage, but he did not want to take the rings home that night and had nowhere to put them. A pawnbroker's offered safe custody and a rough valuation. Thereafter he was ill for four days, and was worried about his wife and about 150 patients in bed with influenza. He had no lack of money, and could at any time have obtained £500 on a reversion. His confidential reports had been first class. He had now had to resign his commission and had been trying to earn a living as a locum tenens, he had secured excellent testimonials.

The Council did not erase his name.

ERASURE FOR ADULTERY

The Case of Douglas Chetham Pim, D S O, registered as of Thornbury, Brecon road, Abergavenny, Mon., M B, B Ch 1915, M D 1920, U Dubl who had been summoned to appear before the Council on the following charge—

That being a registered medical practitioner (1) you committed adultery with Mrs Anne Alma Ferguson on various dates during January, 1935, and on subsequent occasions during the year 1935, (2) in August, 1933, the said Mrs Ferguson consulted you about the health of her son, and during the years 1934-1936 you also stood in professional relationship with the said Mrs Ferguson and her son and her maid-servant. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainant was Mrs Anne Alma Ferguson, who was represented by Mr J P Valetta, counsel, instructed by Messrs Grover, Humphreys and Boyes, solicitors.

Dr Pim attended, accompanied by Mr Macfarlane, instructed by Messrs Le Brasseur and Oakley on behalf of the London and Counties Medical Protection Society.

Mr Valetta emphasised the importance of the dates in the case. Intimacy was admitted but professional relationship denied. Complainant said that the first act of adultery had been in January, 1935 and there had been no suggestion of it before. Respondent put it first in July 1933, and claimed to have known Mrs Ferguson in childhood. Complainant denied childhood acquaintance, and said she had taken her boy to the doctor in 1933. He had been extremely kind at a time when eminent specialists had given the gravest prognosis. He had flatly contradicted the diagnosis and had secured further opinions.

Mr Valetta read a letter dated September 1934 giving a report on the boy's X ray appearances to Dr Pim, and discussing a regime for the patient.

Dr Pim, he said, had dissuaded the mother from getting a London specialist's opinion, promising to keep an eye on the boy himself. He had done so admirably, and the mother had felt a very great sense of obligation. Dr Pim had poured into her ears a tale of domestic woe, including statements that his wife was unfaithful and that he was in financial trouble. On Armistice Day, 1934, he had introduced her to his wife for the first time and the ladies had conversed for an hour. Afterwards Dr Pim had spoken of divorce and re marriage, saying his wife had suggested it, and suggested also that Mrs Ferguson should make provision for Mrs Pim. Thereafter he had laid siege to complainant, saying he had finished with his wife. Then had come a period in which there had been no communication. In 1935 they had stayed together in Torquay for a week, complainant thinking Dr Pim and Mrs Pim had parted. Next March she had been served with divorce papers citing her as intervener, this had been a complete surprise. Adultery had been alleged on a number of dates. A few days later the petition was withdrawn. Then Mrs Ferguson had discovered that Dr and Mrs Pim were living together and they had begun bombarding her for money. Scurrilous statements were circulated to the effect that Mrs Ferguson had broken up the Pim household. In February, 1935, she had required a dental extraction and Dr Pim had taken her in his car to a dental surgeon—not her usual attendant—and had given the anæsthetic.

Mrs Ferguson confirmed the story told by her counsel. She had first met respondent on the beach at Greystones in 1933, she had never seen him before in her life and did not know he existed until that morning. He had not made love to her at that time and they had not committed adultery during that summer. On the beach they had discussed the boy's education, respondent had urged her to send the boy to a school where he himself was about to be appointed medical officer. She had visited him there and he had shown her over the school and been very kind, and had suggested holiday arrangements. Later in the year he had told her about a "tremendous row" concerning his wife and his partner and had said he and his wife went their own ways. In June or July, 1934, she had met Dr Pim again, having moved to Cheltenham in the February, and in August, 1934, she had been very worried about her son and had sent the X ray report and bad prognosis to Dr Pim and asked for help. Later she had telephoned to ask the best doctor to go to in Cheltenham. The doctor recommended was on holiday and his locum who attended was just going, so next day Dr Pim had himself called, bringing the X ray and report. The boy was in bed and Dr Pim and another doctor had consulted about him, Dr Pim had taken the X ray to a local radiologist and got a second reading of it. She had had four doctors already and had asked if Dr Pim could not look after the boy, who had burst into tears at the suggestion of yet another examination. Dr Pim had at first refused as he did not practise in that district but had at last consented, and had been present at the consultation with the specialist. He had refused a fee but had taken a water colour as a gift. Her brother had pressed her to take a London opinion and Dr Pim had told her not to. He had given her a tonic for herself some patent medicine and she had taken it. She had asked him about a pain and he had asked about an operation she had had and offered to write to the surgeon. Instead she had returned to Ireland and seen the

surgeon. Dr Pim had asked her to find shooting for him there. They had travelled over on the same boat. Between August and November 1934 Dr Pim had brought in a tonic for the boy but had not attended any other member of the household until the maid got influenza in December. He had performed small operations on her hand and foot. The maid had been on his panel. She had felt very grateful and would have done anything she could for him. After the dental anaesthetic in February 1935 respondent had not attended at her house. He had offered to but she would not have it.

Cross-examined by Mr Macfarlane she said she made the complaint in March 1937 because of the calumny by his brother in August 1935. In January 1936 she had written to Dr Pim saying that she would go to the General Medical Council if that were necessary to get Dr and Mrs Pim to speak the truth. The years' delay was due to her nephew's grave illness. She had not heard in March this year that Dr Pim was doing rather well in practice now and had not told two gentlemen in Cheltenham that she was taking proceedings for revenge. She denied that Dr Pim had recognised her on the beach at Greytoness; she had played on the beach there as a child. She had been for walks on the golf links in the evening with Dr Pim at Greytoness but had not had intercourse with him then. He had not done anything professionally for the son in August 1933. They had discussed the school and bullying. She had asked nothing of him; he had volunteered everything. He had sent no bill and she had not thought of suggesting payment. She had asked why he took so much trouble and he had said he would get a guinea a term for him if the boy went to the school he recommended. He had never examined the boy with any instrument; being on holiday he had no instruments. The boy had suffered from travel sickness on the journey from Ireland and Dr Pim had given him a sedative at the hotel. The boy had not disliked him more than any other doctor. At no time had Dr Pim written and refused to attend the boy. He had written a letter to enable the boy to be removed to the new school—as he was a ward in chancery—it said the boy was not in very good health. She had never tried to see Dr Pim or rung him up asking for meetings. He had not proposed to discontinue the friendship; no such letter had been written. She had telephoned in June 1934 and asked him to come but had never previously rung him up. The consultation about the boy was before she ever consulted him about herself. In March or April she had had a sort of caffeine poisoning and her cousin had rung up a nearby doctor; she had paid the bill. She had had a facial burn about this time and had shown it to Dr Pim professionally; he had said it was all right. She had written to the Irish doctor and asked for the report he had sent to Dr Pim; in his reply (produced) the doctor had written that he had no record of a report sent to Dr Pim and had only seen the boy once and found no clinical signs of disease. Yet she still maintained that this doctor had said the boy might die at any moment. The X-ray had been sent to Dr Pim not to her. She did not know what consultation or professionally meant; she used the terms in her own meaning. She had paid the other doctors but not Dr Pim. She had written also to the doctor who had examined the boy in Cheltenham with Dr Pim and he had replied to her solicitor that on August 30th he had received a message from her and had arranged to meet Dr Pim at the house as Dr Pim had the X-ray. He had asked Dr Pim

to get in touch with the tuberculosis officer. He recollected Dr Pim saying he did not want to take on the case as he lived too far away and did not recall his making an examination. He had never regarded Dr Pim as the doctor in charge and had charged for ordinary visits and not for a consultation. He had only understood that Dr Pim would act for him in getting hold of the tuberculosis officer. She did not agree that she herself or any man friend could have done that. The tuberculosis officer had written to Dr Pim that he had suggested lines of treatment to her; he had not made the suggestions to Dr Pim. Dr Pim had shown her the letter but had not given it to her. On the occasion when she had seen respondent's wife Mrs Pim had said she wanted a divorce and told all her life history. She had never mentioned Greytoness or adultery. Dr Pim had had a number of meals with her and had not paid for them. He had given her £20 but that was his mother's money. His mother was almost living on her. His telephone had been switched through to her house but the £20 was not the agreed share of the expense. She had not told the dentist that she would only have gas if Dr Pim gave it or asked for Dr Pim. It had been an emergency. (The letter from the dentist stated that Dr Pim had rung up saying a friend of his had a very bad tooth. He had advised immediate extraction and gas and she had expressed desire to have Dr Pim.) It was not fair to say he was practically living in the flat at the time. In March 1934 another doctor had attended her in April. Dr Pim had gone to practise in Abergavenny where she had written to him. It was not obvious that he was in a very poor state of health and worried to death about the situation. She had gone to live with him in Abergavenny in May. She had lent him a maid as his wife had left him. Mrs Pim had not left in consequence of her arrival. Dr Pim had not cashed cheques for her. Mrs Pim had begged her to do something to help Dr Pim. She had left Abergavenny some time before Mrs. Pim returned.

Re-examined she said she had made every endeavour to obtain witnesses for a slander action against Dr and Mrs Pim because of the scurrilous remarks being made and had been advised that there was no relief to be obtained that way. Rumours were going round both in her Irish home and in Cheltenham. She had appealed to Dr Pim to stop them in October 1935.

Mr Hugh Richard Ferguson, son of the complainant, testified in support of the story told by his mother. Dr Pim had given him some medicine for travel sickness. After his illness in Ireland Dr Pim had examined his chest with a stethoscope and asked various questions. He was in the room during the tuberculosis officer's examination. He had promised to keep an eye on witness at school and had seen him on Sundays and asked if he was keeping all right. He had given witness some medicine as an alternative to that ordered by the tuberculosis officer.

In answer to the legal assessor he said he had only seen Dr Pim at his mother's flat on Sundays and holidays. Dr Pim had never visited him.

Cross-examined he said he had not liked Dr Pim very much. The first bottle of medicine, he thought, came from the chemist and the second direct from Dr Pim.

Miss Margaret Frances Cadell said she had known Mrs Ferguson since childhood and had been at Greytoness in August 1933. She remembered Mrs Ferguson's visit. She had noticed no signs of intimacy between her and Dr Pim and had heard

no gossip She had not known Dr Pim during childhood

Cross examined, she agreed she had said something to Dr Pim to the effect "You know that person, she used to be Alma Gamble"

In reply to the legal assessor, she said she had never seen them together before

Dr Pim gave evidence denying that of the complainant He said he had been born in Ireland and had usually spent his childhood holidays at Greystones He had seen Mrs Ferguson there in 1933 but had not recognised her until after Mrs Cadell had spoken to him Then he had said "Do you remember me? I'm Douglas Pim" She had replied "Great God, we played hero together as children" During the ten days they had been together there she had wept and said how lonely she was as she was being divorced in Australia He had tried to cheer her and had taken her to a dance, both had had alcohol and on the way home misconduct had occurred He had never seen the boy except when sunbathing on the sands and had passed casual remarks about his physical state and recommended his own school. The boy had gone to that school in January but respondent had not known of it until June After the journey from Ireland he had not seen the boy but had said to the mother "Why don't you send him to bed?" He had never heard of the alleged certificate for the Chancery Division until this afternoon and had never written any such letter In the summer of 1934 he had not been consulted by Mrs Ferguson but she had frequently rung him up and he had refused to see her He had given it her in writing that he did not wish the affair to continue. One day in June she had left a message accusing him of getting her over to England and then letting her down She had complained of loneliness and asked him to tea She was being attended at that time by Dr Basil Taylor She said she had tried to commit suicide because of him, he had repeated what he had said before and walked out of the house At no time in that year did he advise her as her doctor She had written again at the time of the alleged tuberculosis (August, 1934) and he had again refused to have anything to do with her professionally, partly—he had said—because of the distance and partly because of the boy's dislike of him He was not clear whether the X rays had come to him direct or not, he had known the radiologist at college He had never put a stethoscope on the boy in his life and had not been in the room when the other doctor had examined him He had gone to the house out of pity and because Mrs Ferguson had asked him to go and introduce the other doctor, a friend of his He had got in touch with the tuberculosis officer at the other doctor's suggestion because the latter was going on holiday next day He had never seen the resulting X ray or a report of it and had handed the tuberculosis officer's letter to the mother He had himself played no part in treatment Apart from the dental gas he had never acted as a doctor to Mrs Ferguson or her son At the time of the gas he had been having all his meals at her flat, it was about a month after she had been cited in the divorce proceedings She had refused to have gas unless he gave it He had paid £20 the first week in January towards the expenses incurred for him in the flat His wife had joined him at Abergavenny on April 1st and from that time he had had frequent correspondence with complainant He had been under treatment by the medical superintendent of the mental hospital at Abergavenny as he had been so worried about the state of his mind She had lent him a maid, who had

acted as his maid, he had never treated the girl. He had last seen complainant in October, 1935 In January, 1936, he had received a letter from her which he had handed to his wife, who had torn it up and thrown it in the fire

Cross examined, he maintained that complainant had forced herself on him from May, 1933, onwards He had relented in June, and had regretted it ever since She had reproached him hysterically over the telephone until he had said "Shut up I'll come round." The housemaster was his nephew and he saw him frequently, he might have handed the tuberculosis officer's letter to him as a matter of convenience She had offered him a picture, he had refused it, she had said she would break it if he didn't take it The petition had been withdrawn partly because he felt he had done the wrong thing in breaking up his home and partly because friends in Ireland told him the type of woman Mrs Ferguson was

Mrs Pim, wife of the respondent, said in answer to examination that her husband had brought Mrs Ferguson to the house in November, 1934 She had then told Mrs Ferguson the substance of her husband's confession of adultery and that she would take divorce proceedings She had filed a petition but had withdrawn it in March, 1935 She had then become reconciled with her husband and had gone to live with him at Abergavenny Mrs Ferguson had come to Abergavenny on several occasions

On cross examination she said that she had withdrawn her petition because she considered it best for her husband and herself She had known nothing about the existence of love letters She had never asked Mrs Ferguson for money She had even refused Mrs Ferguson's offer to pay for the education of her son She may have told her relations that Mrs Ferguson had broken up her home She denied that she had discontinued proceedings because it was hopeless to expect to squeeze any more money out of Mrs Ferguson

Counsel then addressed the Council. After deliberation in camera the President announced that the Council had found the charges proved to its satisfaction and directed the Registrar to erase from the Register the name of Douglas Chetham Pim

Restoration after Removal at Own Request

On Nov 30th, 1935, the Council acceded to an application by Jean Braun, L.M.S.S.A. Lond., 1915, to have his name removed from the Register. On April 25th, 1937, Dr Braun wrote to the Council asking that his name should be restored to the Register, and forwarding a statutory declaration and a remittance in accordance with the standing orders which relate to applications for restoration after non-penal erasure under the Medical Act, 1858, s. 14. The Executive Committee reported to the Council that the standing orders did not expressly provide for the restoration to the Register of a name which had been removed at the practitioner's own request, though in 1921 the Council had been advised that they had an implied discretion to restore such a name and that it was for the Executive Committee to consider the circumstances and advise the Council. In November, 1921, the Council actually restored such a name on the recommendation of the Committee, and the Committee now recommended that the name of Dr Braun should be restored.

The Committee acceded to this request, but passed at once to consider in camera a report from the Executive Committee which stated that the Committee

had been advised by counsel that the standing orders dealing with the removal of names at the request of the practitioners themselves were ultra vires for the Medical Acts gave the Council no power to make such standing orders. The Committee were satisfied that the Council should recognise that its power to remove names of registered medical practitioners from the Medical Register consists solely of the power of penal erasure given by s. 20 and the power of non penal removal given by s. 14 of the Act of 1858. The Council agreed with the recommendations of the Executive Committee that the standing orders relating to erasure at the practitioner's request be deleted.

CONSIDERATION OF THE CURRICULUM

Prof J B LEATHES introducing the report of the Education Committee said that the committee had now completed a full examination of the Council's regulations for the registration of medical and dental students. It had been instructed to consider the regulations with a view to the removal of discrepancies in practice and to suggest the modifications which would be necessary to bring the policy of the Council into harmony with its resolutions passed in May 1936. The committee now said Prof Leathes advised the Council to rescind the regulations and substitute for them the series of recommendations set out in its report. Hitherto the students' register had been compiled from the forms of request for registration which students filled in at the various schools, and had never been complete. Forms were supplied to the schools but only a portion of the whole, sometimes a small one was returned every year. The method was therefore unsatisfactory. The committee now proposed that deans should send to the Council returns of all persons registered as medical or dental students in order that the Council might be in a position to compile an annual register of the medical and dental students who had commenced their professional studies in each academic year. The Council would be content to rely upon these returns for such information as they might require as to the ages at which students commenced their professional studies, and as to the preliminary examinations in general education and the additional examinations passed by students before admission. It would relinquish the policy by which the authorities of the schools and licensing bodies had been encouraged to make the registration of students by the Council a condition precedent to their admission to the schools.

The committee recommended therefore that the present regulations so far as they related to the method of registration should be rescinded with effect from Sept. 1st 1938. So far as the regulations related to the conditions under which students were registered they should be rescinded from Nov. 1st 1938. These two dates had been chosen on the one hand in order that deans entering students in October 1938 should send in their lists beginning with the academic year 1938-39 and on the other hand that the new conditions of admission relating to age, general education, preliminary examinations and the like which would be affected by the Council's new resolutions governing professional education should not come into operation until those resolutions became effective. The committee suggested Nov. 1st as a suitable date. Originally the Council resolved that the new resolutions should come into operation on Jan. 1st 1938 but in November last they had adopted a recommendation of the committee that the date should be postponed to Oct. 1st 1938. The com-

mittee now recommended postponement for another month in order to give the schools a little more time to come into line with the new changes. It would then be clear that the schools would be at liberty to deal with applications for admission in the first term of the academic year 1938-39 under the 1923 resolutions and that applications for admission in any later term should be dealt with under the resolutions of May 1936. The committee therefore recommended that its recommendations, and the resolutions of the Council adopted in May 1936 should come into operation on Nov. 1st next year.

NEW CONDITIONS OF STUDENT REGISTRATION

The principal changes made in the recommendations to accord with the 1936 resolutions were that before registration as a medical student the applicant must be within three months of attaining eighteen years and must have passed a recognised preliminary examination in general education and an additional examination conducted or recognised by one of the licensing bodies. University matriculation remained the minimum standard of general education. A list of examining bodies whose examinations in general education complied with the recommendations was given in the report. The Council should also recognise as complying with these recommendations such examinations of universities in British India, the British Dominions and Colonies and foreign countries as were accepted by any university of Great Britain, Northern Ireland or the Irish Free State as qualifying for entrance or matriculation.

The subjects and scope of the additional examinations to be required were copied from the Council's 1936 resolutions:—

- (1) For all applicants chemistry (theoretical and practical), the elementary principles of general and physical chemistry and of the chemical combination of elements, including carbon.
- (2) For all applicants, physics (theoretical and practical), the elementary mechanics of solids and fluids, the elements of heat, light, sound, electricity and magnetism.
- (3) For applicants who have received their instruction in chemistry and physics before entering universities, university colleges, or medical schools, one or two subjects of general education other than chemistry, physics, or biology at a standard higher than that of the recognised preliminary examination in general education.

The standard of the additional examination in a subject or subjects of general education should be approximately that required in a subsidiary subject offered for the Higher School Certificate at the examinations specified in the recommendations. This phrase indicated the kind of standard the Council had in mind. The School Certificate in England which could be taken at sixteen or under might under certain conditions exempt from university matriculation but provision was made at the schools for an examination at a higher standard—the Higher School Certificate—for boys in later years. This certificate could be obtained by taking either three full subjects or two full subjects and two others at a somewhat less exacting standard called subsidiary subjects. This latter standard might well have been in the mind of the Council as a standard for the additional examinations.

This change which was perhaps the most difficult of all the new changes had not been proposed without due cause. Since 1923 English schools had been teaching chemistry and physics to boys who intended to take up medicine and a pernicious tendency had developed of allowing boys to pass their test in general education at sixteen and sometimes even

before, and then setting them to study nothing but the principal medical subjects for the rest of their time at school. The present suggestion was an effort to combat that tendency and to draw the attention of masters and parents to the necessity of continuing the general education of students after they had passed the comparatively low standard of the School Certificate. Applicants should be able to offer themselves for examination in biology either before or after they were registered as students.

The committee had met in conference all the deans of the London medical schools except three, and they had unanimously agreed that this method could be worked so far as they were concerned.

THE CASE AGAINST DELAY

SIR HENRY BRACKENBURY said that he was not convinced that the postponement of the operation of the new conditions from Oct 1st to Nov 1st was either necessary or desirable. In May, 1936, the Council had prescribed the new curriculum, both preliminary and clinical, and all members had regarded it as a considerable improvement. It should not, therefore, be postponed longer than was fair and necessary to those who had already embarked upon some portion of their medical education, either at school or at a medical school. The effective date had already been postponed once in order to give the public and secondary schools from which most medical students were recruited two full school years' notice of the alterations that might be necessary for the guidance of their senior boys and girls in the kind of curriculum they should take while at school or immediately afterwards. This notice had been ample. The only effect of postponing the change from Oct 1st to Nov 1st, 1938, would be to enable the authorities of medical schools to train the whole body of medical students who joined in 1938 (for nearly all medical students entered in October) under the old instead of the new curriculum. The recruitment of medical students under the improved conditions would be postponed for a year. The postponement would even embarrass the schools themselves, for they might be conducting two different kinds of curriculum simultaneously, according to whether a student registered in October or November.

Prof R J JOHNSTONE also inquired the reason for the change. His own faculty, he said, had spent a very strenuous winter session preparing for the change, and now would not encounter it for another year. He suggested that the same effect would be produced by a postponement to Jan 1st, 1939, or even Oct 1st, 1939.

Prof LEATHES replied that when the new resolutions came into operation they would, so far as they dealt with clinical years, affect not only students who entered after Nov 1st but all students. Only the conditions of entry after Nov 1st would be affected. The committee had been advised that two years was not enough notice and had thought it advisable to give what amounted practically to an additional year.

SIR H BRACKENBURY asked whether a student who entered in October, 1938, and therefore under the old conditions had not a right to claim registration five years afterwards because he had satisfied the old conditions though not the new.

SIR ROBERT BOLAM suggested that this question must be put to the licensing bodies. Sir Henry was not fully aware of the difficulties that beset the officers of medical schools when a new set of regulations was announced. The faculty at his own school

had been bombarded by headmasters and parents with questions whether the pupils who had been under preparation for two or three years could sit in October, 1938, under the old regulations, or whether they must prepare for the new. To upset the whole of the medical curriculum meant years of work for a licensing body in readjusting its arrangements. The postponement meant that medical schools could but need not insist on pupils coming in under the new recommendations. If they gave sufficient notice in their calendar they could alter the succeeding years of the curriculum. He doubted, however, whether the schools had yet got everything ready for the later years. He hoped that the Council would not embarrass the public and the medical schools by bringing the new conditions into force in October and forcing them to deal with many applications for exemption.

Prof L P GAMGEE said that such difficulties were not felt in all schools. His own school was quite ready to adopt the new regulations on Oct 1st. If the change was postponed for a month it would probably cause trouble in the shape of applications from students who had entered under the old regulations to undergo the whole of the old curriculum. If the extra month were given the Council should recommend that all students who entered during October, 1938, should, for the remainder of their course, go under the new regulations.

Dr D J COFFEY, however, spoke in favour of the extra month. The raising of the age to eighteen had been unexpected and the students who came up from schools after doing chemistry and physics might not have done extra subjects, but would have an opportunity of coming in without them. A student, however, who had passed in chemistry and physics by Nov 1st under the old system was in an ambiguous position. Under the old regulations he would have had at the end of the year to pass an examination in chemistry, physics, and zoology, but under the new regulations he would begin on his anatomy and physiology at once. Had he to pass the old examination at the end of the first year and the new at the end of the second? He would have to be exempted from the heavy first examination in chemistry and physics required under the existing curriculum. Dr Coffey also suggested that printed forms should be supplied to each school.

Prof GAMGEE also opposed the postponement to November, but Sir R BOLAM pointed out that the contract into which the new student entered with his medical school gave the school liberty at any time on due notice to alter the syllabus and examination subjects. No school could be run on any other lines.

Prof J W BIGGER thought that great confusion would be caused and students would go to the schools which gave them the most generous exemptions. If the notice given to the schools was not enough the correct procedure would be to hold back the new conditions until October, 1939. November, 1938, was either too soon or not soon enough.

After further debate a motion by Sir H BRACKENBURY to put the date forward until Oct 1st, 1938, was lost by 20 votes to 6.

REGISTRATION OF DENTAL STUDENTS

The committee advised the Council to require that every dental student (subject to occasional exceptions) should be registered in the same manner and under the same conditions as a medical student, but that applicants for registration might commence their professional studies as pupils of a registered dental practitioner instead of at a recognised dental hospital.

or school Under the regulations at present in force said Prof LEATHES a student who took his dental mechanics in his apprenticeship might deduct half the time from his curriculum In consultation with dental authorities including the dental committees of the Council, the Education Committee had decided to recommend that an applicant who after reaching seventeen, had served two or more years as a bona fide apprentice in dental mechanics with a registered dental practitioner should if the licensing body thought fit be allowed to antedate his registration by not more than six months A year was too much to allow out of a dental curriculum of four years A dental student could not do all that was required of him in three for he had to go to a dental clinic for two years and could not pass his biology anatomy and physiology in one only The change would bring no hardship as applications for exemption on this ground were very rare

Many persons would like to see the recognition of outside dental mechanics done away with, but there were always a certain number of deserving men who had earned their living for several years as dental mechanics done very good work and also educated themselves and passed their preliminary examinations They deserved encouragement and made excellent practitioners The committee had therefore recommended what they considered a fair allowance

Mr BISHOP HARMAN urged that dental mechanics should still be allowed one year's exemption from the dental curriculum if they had served two years as apprentices but although the Council agreed that these students were exceptionally deserving people he could not find a second for his amendment to substitute twelve months for the six months recommended by the committee

PUBLIC HEALTH

Sir GEORGE NEWMAN chairman of the Public Health Committee referred in introducing its report to the new resolutions and rules submitted by the Committee for diplomas and degrees for public health. Formerly the rules had provided that candidates should produce evidence of having devoted so many hours to the study of specified subjects but the new rules laid down that a candidate should produce evidence that he had regularly attended a course lasting not less than a stated number of hours This change would said Sir George be more convenient to the licensing bodies The earlier provision that candidates must make 24 daily attendances of not less than two hours each at a fever hospital had been deleted as too difficult to work Candidates would now be required to show that they had attended for three months on the clinical practice of an approved hospital for infectious diseases Of the twenty licensing bodies who had seen the draft rules three only had criticised them substantially The Royal Army Medical Corps found difficulty in Rule 2, which provided that the curriculum could not be taken in less than a year The Committee had felt that the old rules had to be strengthened to slant out the part-time or somewhat transitory kind of training sometimes contemptuously known as night school education

Dr H L TAYLOR suggested that this rule might be relaxed for R.A.M.C. candidates The rules were adopted without dissent

Indian Medical Diplomas

The Executive Committee reported that in February last they had passed a resolution that holders of diplomas granted by the Punjab University

on or after Feb 25th, 1930 should be entitled to registration in the Colonial List The Committee passed a similar resolution on May 24th recognising the diplomas of the University of Calcutta granted on or after Oct 16th, 1936 Sir NORMAN WALKER (President) chairman of the Committee referred to the work of the recently established Medical Council of India in maintaining the standard of Indian university examinations The three universities already on the list were he said those of Bombay Madras and Patna

The Pharmacopœia

The report of the Pharmacopœia Committee was presented by Prof DAVID CAMPBELL, its chairman He said that 43 276 copies of the British Pharmacopœia 1932 had been sold up to date 1000 of them in the last half year Of the Addendum 1936 the number of copies sold since its publication at the end of last year had been 5557 The British Pharmacopœia Commission had reported to the Committee that its principal concern had been the scope of the next Pharmacopœia It had reviewed the monographs of the present work and had made a survey of drugs which had been recently introduced or which were attaining increased use in therapeutics It had compiled a list of those drugs which through decreased use or doubtful therapeutic value might be regarded as no longer worth inclusion in the Pharmacopœia The lists of proposed omissions and additions had been sent to the appropriate Government Departments and medical bodies to the Governments of India and the Dominions and to various branches of the Colonial Medical Service with requests for criticisms and suggestions Information had been interchanged with the United States Pharmacopœia Committee of Revision, which had sent the Commission a report on its plan for the revision of the U.S. Pharmacopœia by means of annual supplements The Commission proposed to watch the plan with interest.

BRITISH HOSPITALS ASSOCIATION

THE weather collaborated with the Mayor of Torquay (Councillor A Denys Phillips) and his fellow townsmen in providing a welcome to the members of the British Hospitals Conference for their annual conference last week. Miss M G MILNE, matron of Leeds General Infirmary spoke at the first meeting upon the status and rôle of the nursing profession in the hospital system. Contrary to the generally accepted idea she expressed the opinion that salaries paid to nurses in training were adequate and in some cases excessive in an endeavour to tempt an increased number of candidates More freedom might be allowed however to the trained staff and it might soon be necessary to undertake the additional expense of allowing senior sisters to be non resident. On the controversial question of the matron's position in respect to the supply of food Miss Milne was content to leave the control to the lady house-keeper with direct access to the house governor while arranging for close collaboration for which she made a powerful plea among all branches of the staff with the nurses

Hospital publicity was the subject of a paper read in the afternoon by Mr C F A BEDWELL, house governor of King's College Hospital Based upon a resolution passed at the last International Hospital Congress he considered the relationship of hospital publicity to health education propaganda In particular he urged that the voluntary hospitals should be given a proper place in the campaign now being organised for next autumn under the aegis of the Ministry of Health Mr Bedwell directed

attention to the admirable paper by Dr Homer Wickenden, of the United Hospital Fund of New York, for the forthcoming congress in Paris, published in the current issue of *Nosokomion* and discussed the relationship of the press to hospital publicity as well as the contribution of broadcasting and the films

VOLUNTARY HOSPITALS COMMISSION

Lord SANKEY made a great impression upon his audience on the following morning in presenting the report of his commission. He based his argument on the contention that there is a general agreement that the voluntary hospital system cannot go on as it is and that something must be done and that had been the opinion of all the witnesses who came before the commission. There was no proposal whatever in the recommendations of the commission to pool funds, but they had endeavoured to create an organisation by which it might be possible to pool experience. In order to deal with the financial difficulties and to provide a means by which the State could assist with grants in aid the commission proposed the appointment of a committee similar to the University Grants Committee as, said Lord Sankey, "the analogy between the universities and hospitals is almost perfect."

Provost SHEEN, in dealing with some of the details of the report from a medical point of view, strongly urged the substitution of auxiliary hospitals for convalescent homes and the abolition of the "process of canvassing masses of people" on making appointments to the staffs of hospitals.

Sir REGINALD POOLE, another member of the commission, said that he had come to its deliberations with an entirely open mind and was in full agreement with the recommendations. He added a personal expression of his interest by offering to contribute to any fund raised to carry them into operation.

The effect of Lord Sankey's speech upon the audience, in which at the outset there was a somewhat critical atmosphere, was seen in the afternoon when at the annual meeting a resolution was passed, almost without discussion, to appoint a special committee to implement the first three resolutions of the commission—namely, the division of the country into hospital regions, the formation in each region of a voluntary hospitals regional council to correlate hospital work and needs in the region, and the formation of a central council to coördinate the work of the regional councils.

It is announced that the first meeting of the special committee will be on June 9th.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdrs E B Pollard to *Arcthusa*, and G S Rutherford to *Pembroke* for R N Hospl, Gt Yarmouth
Surg Lt F Bush transferred to Emergy List
Surg Lt B O'Neil to *Ramilles*
Surg Lts transferred to Permanent List H J Bennett, J W Caswell, L G Yendoll, D B Jack, J G V Smith, G S Thomas, W B Taylor, J E Davenport, W D Gunn, E J Littledale, G D Wedd, E James, and W A S Grant

Surg Lt (D) W L Mountain to *Ramilles*

The following have been appointed Admiralty Surgeons and Agents: Mr L A Hiscock, of Southbourne, Emsworth (Emsworth) Mr J R J Beddard of Frome (Frome), and Mr T Sharp, of Rothesay, Bute (Rothesay)

ROYAL NAVAL VOLUNTEER RESERVE

Surg Lt Comdr D M Craig to *Revenge*
Surg Lt Comdr (D) G A O White to *Victory* for R N Hospl, Haslar
Surg Lt C M Lamont to *Caledonia*
Probv Surg Lt J Ronald to *Iron Duke*

ROYAL ARMY MEDICAL CORPS

Lt Col G H Divo, DSO, having attained the age for retirement, is placed on ret pay
Maj W L Tyndall, MC, to be Lt Col

REGULAR ARMY RESERVE OF OFFICERS

Capt J B Murray (Army Dental Corps), having attained the age limit of liability to recall, ceases to belong to the Res of Off

TERRITORIAL ARMY

Lt B B Hosford to be Capt

ROYAL AIR FORCE

Squadron Leader F P Schofield to R A F General Hospital, Palestine and Transjordan, Sarafand
Flight Lts R F Wynroe to R A F Hospital, Cranwell; J F Sandow to No 1 (Indian Wing) Station Kohat India, J L Walsh to No 20 (Army Coöperation) Squadron Peshawar, India, and A W Callaghan to R A F Station, Biggin Hill

Flying Offrs J H L Newnham, P A Wilkinson to special duty list on appointment to short service commissions, and J H Preston to R A F Station, Debden

Short service commissions as Flying Officers for three years on the active list and all to Medical Training Depôt, Halton C D Clements, F V MacLaine, J R McWhirter, A Muir, J P Brazil, and A W St C Greg

Dental Branch—Non permanent commissions as Flying Officers for three years on the active list and all to Medical Training Depôt, Halton A J Clegg, F V Franks, T A Gray, and J F M Sampson

Flying Offr H B Shay to Special Duty List, on appointment to a non permanent commission

INDIAN MEDICAL SERVICE

Indian Medical Department—Asst Surgs (1st Cl) to be Lts (Sen. Asst Surgs) D H J Nicholas and J W C Lopez

THE LANCET 100 YEARS AGO

June 3rd, 1837, p 370

From a summary of the report for 1836 from the Morgue, Paris

Causes of suicide which were identified—

	Male	Fem	Total.
Mental alienation	10	12	22
Bad conduct	8	1	9
Disgust of life	6	—	6
Misery	4	1	5
Robbers	4	1	5
Disappointed love	3	1	4
Loss of money	3	1	4
Quarrels and domestic disappointments	1	3	4
Loss at play	3	—	3
Drunkennes	3	—	3
Result of quarrels	3	—	3
Incurable disease	2	1	3
Departure from, or separation of, family	1	1	2
Brain fever	2	—	2
Loss of wife	1	—	1
Embarrassed affairs	1	—	1
Result of remonstrance	1	—	1

From the section on deaths from drowning in the same report—

Accidents leading to submersion—

Bathing	13
Drunkennes	8
Boating, or sailing	6
Falling from horses, while drinking	3
Playing on the shore	2
Fishing	2
Leaping near the river	1
Washing feet saving others, storm blowing individual into water, &c	4

THE LANCET

LONDON SATURDAY JUNE 5 1937

THE CAPITATION FEE

THE national health insurance system, in the twenty fifth year of its age is again faced with the problem of making an equitable adjustment in the capitation fee paid to the practitioners responsible for the medical care of the 18 million insured persons in Great Britain a number which it is proposed to increase by the addition of approximately 1 million juveniles entering insurable employment between leaving school and reaching the age of 16. As on previous occasions the Insurance Acts Committee of the British Medical Association representing the practitioners and the Government have been unable to reach agreement and the question has with the consent of both parties, been referred for determination to an independent court of inquiry. The present inquiry is simplified in that it is not to consider the question *ab initio*. It starts with the assumption that the capitation fee of 9s awarded by a similar court in 1924, is to be taken as the proper remuneration at that time and the task of the present court is to ascertain what changes if any should be made in the capitation fee to meet the changes that have taken place since 1924 in the conditions under which insurance medical practice is carried on. The court of inquiry began its deliberations on May 26th and the Ministry of Health and the Insurance Acts Committee have exchanged memoranda of evidence and rejoinders all of which are reproduced in the supplement to the *British Medical Journal* of May 29th.

The Committee contends that the changes affecting insurance practice since 1924 justify an increase in the capitation fee from 9s to 12s 6d and bases the contention on three main grounds. First, it is pointed out that recently and especially within the last ten years there has been a reorientation of medical thought and a widening of the basis of medical practice which now seeks not only to remove diseased conditions but to promote positive health. The increased responsibility and skill involved in such preventive work is not fully expressed in the increase in the number of the items of services rendered but it is of definite value to the community and should be taken into account in assessing the remuneration of insurance practitioners. Moreover the advance of medical science has increased the complexity of diagnosis and treatment and therefore the amount of time necessarily spent with individual patients. Secondly the Committee produces evidence of an increase in the average annual number of attendances made to each person on a doctor's list. In 1924 the number was estimated by the Minister

at 3.5 and by the Committee at 3.75. Since 1924 the Committee has arranged for the keeping of special records by practitioners in nearly all insurance committee areas, and has thus obtained particulars of over 3000 practices which it is contended show that the average annual number of attendances per person on a doctor's list in the years 1930-36 was 5.02. Thirdly it is put forward that the ratio of practice expenses to gross receipts which was taken by the 1924 court to be 25 per cent, is now 33 per cent. The Committee accepts the view of the Ministry that the fall in the cost of living would, other things being equal justify a reduction of 5d in the capitation fee and that there has been some decrease in motoring costs—not more however than 4.6 per cent corresponding to a reduction in the capitation fee of 4d—but it is contended that these reductions are far outweighed by the increased costs under other heads and by the increased responsibilities and efforts now required in insurance practice. The Committee emphatically rejects the Ministry's view that the young workers proposed to be brought within the health insurance system will need less medical care than the general body of insured persons.

The most important point at issue between the Ministry and the Committee is the extent of the increase in the work devolving upon insurance practitioners and especially in the average number of services rendered to each person on a doctor's list. According to the records specially kept at the instance of the Committee the number in 1930-36 was as already stated 5.02, but an examination made by the regional medical officers of the insurance medical records kept in 600 practices during 1936 showed that the number in those practices was 3.60 and it was found that while the number of surgery attendances had increased by 10.7 per cent as compared with the results of a similar examination made in 1924 the number of visits had fallen by 3.8 per cent. To estimate the net effect of these changes the visits and attendances were weighted in the ratio of 1½ to 1 respectively, the average fee in private practice for a visit being usually about half as much again as the fee for a surgery attendance. The figures were corrected for the omission of records of persons dying during the period under review in each of the years in question and when the weighting is applied to the figures so corrected the totals become 3.99 in 1924 and 4.12 in 1936 showing a net increase in services rendered of about 3½ per cent.—which would be met by an increase of rather less than 4d in the capitation fee as against the 3s 3d claimed under this head by the Committee. In considering the contention that scientific advances have made insurance practice more exacting the Ministry expresses the view that the improved methods have mainly affected specialist practice and that such methods as have been adopted in general practice for example the injection of varicose veins have tended to reduce the total services required. The Ministry gives statistics drawn from insurance medical records and hospital reports which it is suggested afford

evidence that "insurance practitioners have been relieved of some of the more onerous part of their work by recent developments of health services" As regards motoring costs, the estimate in the Committee's memorandum assumes the use of a 15 h.p. model, which it is stated, "is perhaps typical of the car most commonly employed in general practice," and a running cost based on petrol consumption at the rate of 20 miles per gallon The Ministry's figures are based on a car of 9 to 10 h.p. consuming petrol at the rate of 32 miles per gallon

There is an acute difference of opinion on the question of the work that would devolve upon practitioners by bringing persons under 16 years into insurance on their entering insurable employment The Committee presses the view that though in providing medical care for these young people a practitioner's duties will be to a considerable extent preventive and advisory—that he will be concerned less with incapacity than with positive instruction in health and in the early detection and treatment of disease—they will be none the less onerous For such persons the practitioner's services though different in kind will be more rather than less important than those rendered to other members of the insured population It is urged that the period of "transition from the sheltered years of school life to the early years of wage earning is very commonly a difficult and trying one, when the friendly supervision of the family doctor is of paramount importance," and that therefore the new responsibilities it is proposed to entrust to insurance practitioners will be specially important, not only from the point of view of the individual patients but from that of the community of which they form part The Ministry agrees that the period of young adolescence is important for future health, but holds that it does not follow that persons of the age in question require more treatment than older persons, or "that in practice they will demand or receive more treatment", and from evidence drawn chiefly but perhaps not very appropriately from mortality-rates, incapacitating sickness experience, and insurance medical records, it is submitted that the claims which this new class of insured persons are likely to make on the time and energy of insurance practitioners may reasonably be assessed at about half those made by an equivalent number of older insured persons The Ministry concludes, however, that there should be one uniform capitation fee for all insured persons, including the juveniles, and that the fee should be 8s

The chief impression left by the study of the four able documents now published is that the court of inquiry has still a good deal of ground to explore The discrepancies between the estimates made by the Ministry and the Committee respectively of the services to be rendered by insurance practitioners, and of the costs that will be entailed in rendering the services, are so great that further information seems needed of the data on which the estimates were based, and the methods employed in handling these data In the arguments put forward there appears to be some difference of

outlook and emphasis The Ministry seems to consider the question of remuneration in terms of separate items of service—from a strictly quantitative point of view The Committee, on the other hand, rightly emphasises the importance of considering also the kind and degree of the responsibility assumed This is in harmony with the general principle on which the capitation system of payment is based, for in that system the doctor is paid, not—as in the attendance system—for work done but in proportion to the responsibilities he shoulders The court was instructed to have regard in its inquiry to "other relevant factors" and not the least of these is the attainment of the willing coöperation of insurance practitioners in the greatest of national services

NOVEL METHOD OF ADMINISTERING HORMONES

IN our issue of April 11th last year experiments were recorded showing that the effectiveness of testosterone could be much increased by augmenting the volume of oily medium used for injection or by adding fatty acid to the solution The effect was probably due to retardation of absorption and decrease of wastage of the hormones In an annotation we then drew attention to the parallelism between these experiments and earlier work on increasing the effectiveness of œstrone and œstradiol by subdivision of the total dose or by esterification Soon afterwards the preparation and biological examination of a long series of aliphatic esters of testosterone led to the selection of the propionate as giving the optimum combination of intensity and duration of action,¹ and it was shown that, on castrate rats, a constant total dose of testosterone was more efficient given as propionate once weekly than given as free hormone twice daily.²

More recently further tests have been carried out with the esters of œstrone and œstradiol, both on rats³ and on the feather response of brown Leghorn capons.⁴ By the latter test it can be shown that whereas 1 mg. of free œstradiol in one dose has an effect lasting barely one day, 1 mg. as 3 benzoate has an effect lasting ten days, and 1 mg. as 3 benzoate-17 acetate one lasting fifteen days It seemed likely that this effect of esterification depended on either alteration of the solubility of the compound, resulting in slower absorption from the site of injection, or prolonged liberation of free hormone from slow hydrolysis of the esters Some interesting experiments now reported by DEANESLY and PARKES⁵ have a bearing on these alternatives It was found that with androstenediol and *trans* androstenediol an increase in the volume of oily medium actually decreased the effectiveness These compounds are relatively insoluble, and the more concentrated solutions

¹ Ruzicka L. and Wettstein A. (1936) *Helv. chim. Acta*, 19, 1141. ² Miescher K. Wettstein and Tschopp E. (1936) *Biochem. J.* 30, 1977.

³ Parkes A. S. (1936) *Lancet* 2, 674. ⁴ Miescher K. Schulz C. and Tschopp (1937) *Schweiz. med. Wschr.* 67, 68.

⁵ Parkes (1937) *Biochem. J.* 21, 579.

⁶ Deanesly R. and Parkes (1937) *Chem. and Ind.* 56, 417.

readily crystallise out to form a mush of oil and solid matter. It seemed therefore that the greater effectiveness of the concentrated solutions might be due to slow absorption of the crystal mush. This possibility was investigated by administering testosterone to rats and oestrone to capons by the subcutaneous implantation of a solid crystal or compressed pellet. The results were remarkable. A single implantation of a 2 mg crystal of free oestrone feminised the growing plumage of capons for 2-3 months four times as long as a similar amount of the most effective ester. A single implantation of a 2 mg pellet of free testosterone to castrate rats caused greater development of the accessory glands at the end of ten days than the daily injection of a corresponding amount of the propionate in oil.

In view of the increased response in such experiments where absorption of the free hormone was inevitably slow converse experiments were carried out the esters were administered in such a way that absorption into the circulation was inevitably rapid (intraperitoneal injection) or instantaneous (intravenous injection). Given in this way neither oestradiol benzoate nor testosterone propionate showed any prolongation of action, indicating that hydrolysis is rapid once the compound gets into the circulation. Hence it is concluded that the alteration of hormone effectiveness by esterification depends on a change in the solubility of the compound in body fluids and consequent alteration in the speed of absorption from the injection site. DEANESLY and PARKES also point out that since the method of administration has such a profound influence on the effectiveness of a compound and since the optimal conditions differ for different compounds a valid quantitative comparison of two substances can only be carried out after a thorough study of the conditions necessary for maximum efficiency.

A NEW USE FOR ETHYLENE

ENCEPHALOGRAPHY a valuable method of investigation which is often employed in neurosurgical clinics has the one great drawback of producing intense headache vomiting and malaise in nearly all of those subjected to it. Headache may disable the patient for several days the other disturbances usually subside after a few hours. Any method which would give equivalent radiological results, but without these unpleasant though not dangerous accompaniments would clearly be welcomed. It has been assumed by some surgeons that the air itself has an irritating effect upon the brain and meninges. Others suggest that a more readily absorbable gas would cause less discomfort. Oxygen carbon dioxide nitrous oxide and helium have all been used as substitutes for air but there has been no unanimity of opinion that they are any better and air is still used in most clinics.

Dr HENRY NEWMAN of California has used ethylene for encephalography in thirty cases. In water at 20° C this gas is about seven times as soluble as air. Nitrous oxide—possessing a

solubility nearly forty times that of air—was used in a few cases but the gas was absorbed so quickly that the radiograms were unsatisfactory. The pictures obtained when ethylene was used showed good definition, provided that the exposures were made within fifteen minutes of the insufflation. The gas disappeared much more rapidly from the subarachnoid space than from the ventricles. Dr NEWMAN thinks that the headache experienced during the injection was not less severe than when air was used but that it lasted a much shorter time. Patients were usually quite comfortable within three or four hours and were able to get up the following day. The average stay in hospital following air injection was three days, the use of ethylene reduced the average to 1.85 days. The author does not believe that the anaesthetic property of ethylene has any significance, but that its free solubility and consequent more rapid absorption is the reason for its usefulness in these cases.

The removal of cerebro spinal fluid and its replacement by a gas must profoundly affect the dynamics of the intracranial structures. Indeed, it is surprising that in the absence of a space occupying lesion or abnormally fragile blood vessel the central nervous system can sustain such an insult without apparent damage. The withdrawal of the cerebro-spinal fluid which affords support to the meninges and arteries by reason of its density and pressure and its replacement by a medium of such vastly different density, even under a considerable pressure can hardly take place without gross alteration in the tension of the various intracranial structures. This effect will be most pronounced upon the relatively unprotected vessels coursing over the pia in the subarachnoid space and is probably responsible for the immediate severe headache and shock-like reaction. A pleocytosis of the cerebro-spinal fluid subsequently develops and the pressure may remain unduly low or rise above the normal. Various pieces of apparatus have been devised in order that the displacement of the fluid by gas may be gradual and may lead to a minimum of disturbance of the intracranial structures. It is probable, however that whatever method be adopted there will of necessity be a "basal" degree of headache, which will be noticeably severe if the method involves sudden, violent fluctuations in the intracranial pressure. This immediate reaction will clearly be unaffected by the nature of the gas employed. The prolongation of the disturbance for two or three days is to be related to the meningeal reaction. It is possible that if the gas be rapidly absorbed from the subarachnoid spaces the pia-arachnoid reaction may resolve more quickly. This was certainly the clinical observation in Dr NEWMAN'S cases.

Dr Robert Hutchison has accepted an invitation to serve on the committee to review the use of corporal punishment in the penal system of Great Britain. The constitution of the committee is given in our Parliamentary column.

ANNOTATIONS

PROGRESS IN THE HYGIENE OF INDUSTRY

LAST week the committee stage of the Factories Bill was completed in the House of Commons under the able guidance of Major G. Lloyd George and the Bill was ordered to be reported to the House. It may be well to take stock of the present position and to inquire in what respects the Bill has been amended from the point of view of industrial health during such exhaustive discussion. They may be briefly summarised thus.

The Adolescent—Young persons between 14-16 years are not to work more than 42 or 44 hours a week. That is a welcome move in the right direction. We have ourselves consistently advocated a 40 hour week for young persons of these ages. The public weal demands that adolescent men should be both encouraged and enabled to live a full and healthy life during the second physiological period of rapid growth, and we have recently indicated the support given to this demand from many sources.¹ Welcome also is the withdrawal of the clause permitting boys of 14-16 to be employed in certain trades for 56 hours a week between 6 A.M. and 10 P.M. The Home Secretary is to be given power to forbid overtime for young persons up to 18 where "detriment to health" can be shown and also to reduce overtime for women and young persons if it be proved that that overtime is "unnecessary" in a particular industry. The practical value of these concessions is lessened by the well known difficulty of proving detriment to health or the presence of necessity. Only a strong executive could get good value out of these and other vague clauses in the Bill. The number of weeks in the year during which a woman may work overtime is reduced from 30 to 25, and here again the Secretary of State is empowered, under certain circumstances, further to reduce the hours of work.

General Hygiene and Safety—Washing facilities and accommodation for outdoor clothing are now to be provided in all factories, we must recall how wide is the new definition of a factory to realise the extent of this advance. The safety clauses in the Bill were so well drawn at the outset that little alteration has been required, it is good that all old hoists and lifts must be fitted with automatic locking gates.

It is still, however, too early to measure accurately the extent of the improvements in industrial hygiene which the Bill will ultimately contain. A number of amendments were withdrawn in committee upon the understanding that the Home Secretary would reconsider them and, if possible, reintroduce them during the report stage. Some provision has been made for the re-examination of young persons but it is too early also to be sure whether certain important amendments which appeared to be very desirable on medical grounds and which were not incorporated in the Bill have been irrevocably lost—e.g., the setting up of a standard of available floor space in work rooms in order that overcrowding may be avoided. Standards of air space are laid down, in the estimation of which only 14 feet of the height of any work room may be taken into account. Experience suggests that under certain circumstances the available floor space per person is the more important consideration. In corners of a workroom in which a conveyor belt is working there may be gross overcrowding, which may result in severe epidemics of

influenza or sore throat, while the air space of the room is well above the specified standard.

There remains one vital point in the Bill to which constructive criticism, both medical and lay, ought to be directed—viz., to provide effective means to assist the Secretary of State and the Home Office inspectorate in the discharge of the onerous responsibilities which are laid upon them. The Bill, as it is now drawn and amended, is capable of being made a charter of industrial health. Or it may leave things much as they are. Sound and progressive advance in industrial hygiene will depend more than anything on the creation of a strong, representative, and lively advisory council to the Minister. It may be more important now to make sure that the Minister's powers to make special regulations and orders are neither abused nor allowed to remain unused, than it is to obtain an alteration in specific clauses in the Bill. Many of the orders issued under the authority of the Act of 1901, open as they may be to criticism, have been potent instruments for health in so far as they were the expression of medical needs and of practical possibilities as they existed within the several industries.

THE OLD FARMER AND THE RABBIT

THE practice of dentistry is protected by law far more effectively than is that of general medicine. Under the Dentists Act 1921 no person whose name does not appear on the Dentists' Register may practice dentistry or hold himself out either directly or by implication as practising or as being prepared to practice dentistry, and the penalties for contravention of the Act are severe. Nevertheless it is not easy for the Dental Board to obtain specific evidence of practice by an unregistered person which is likely to secure conviction in a court of law. In his address at the opening of the thirty second session of the Board, Sir Francis Acland mentioned one instance in which the difficulties had been surmounted. A person whose name had been penally erased from the register had opened a business described as a dental repair company and had advertised it repeatedly in the local press. The advertisements included a variety of ingenious phrases designed to convey to the uninitiated that the advertiser was a registered dental practitioner, and as such was entitled to practise. In testimony to the ingenuity of these phrases Sir Francis regarded it as inexpedient to recite them, but the Board obtained a conviction on charges of holding out and of practising, penalties amounting to £81 being inflicted. Five months later when further evidence of practice became available the same person was again convicted and was fined £25 with costs. This was a case in which the Board had been pressed for some time by a professional organisation to take action but had waited patiently for evidence sufficient to justify prosecution. Sir Francis added: 'In this connexion I am reminded of a story of an old farmer in my county who was wont after finishing milking to go up to a field on the farm where, looking over the bank, he could see a large rabbit quietly feeding outside its hole, and after taking careful aim at it to miss it. And on turning away sorrowfully he would console himself by saying 'That ther rabbitt ll come out of that there hole wance tu often'. One may hope that his perseverance was ultimately rewarded, but his practice is not one which I can recommend to the Board for their imitation. It is better in most cases that we should

¹ *Lancet* Feb 20th 1937 p. 431

not shoot unless our armament is so powerful that missing is extremely unlikely. I find too that most rabbits will come within extremely short range if given a little time.

CHEMOTHERAPY OF STREPTOCOCCAL INFECTIONS

THE consequences of the discovery of Prontosil are increasing rapidly in complexity. When it was shown that this drug acts by liberating in the body a substance (p-aminobenzenesulphonamide) now known as sulphanilamide and that sulphanilamide itself could be administered with equally good effect, much that had been obscure became plain and when the authors of this secondary discovery reported¹ they had synthesised over a hundred similar compounds without finding any of equal therapeutic efficiency it seemed as if the first shot had struck the bull's-eye and nothing further remained to be done in this direction. Nevertheless sulphanilamide has at least one rival known under the name of Prosepta sine, a report on which by Dr B. A. Peters and Dr R. V. Havard appeared in our last issue. Their experience with it in the treatment of erysipelas has been favourable, and this is in accordance with many previous reports on prontosil itself to which another is added by Dr G. E. Breen and Dr J. Taylor on p. 1334. Meanwhile Dr G. A. H. Buttle and his colleagues at the Wellcome Laboratories who have previously widened the scope of this inquiry enormously by showing that sulphanilamide has a remarkable effect on a variety of experimental infections other than those produced by *Streptococcus pyogenes* now enter the field with two freshly synthesised compounds, diaminosulphone and dinitrosulphone, the calculated therapeutic value of which is even greater than that of sulphanilamide, this being deduced from a comparison of their bactericidal activity *in vivo* and their toxicity. Study of the details in Dr Buttle's paper (p. 1331) will show that the question of toxicity is by no means simple since this appears to vary distinctly in different animal species. Another important difference is that the action of diaminosulphone at least in the blood of a monkey is strikingly persistent.

There is no knowing where these investigations may lead either in the direction of improving the present treatment of streptococcal infections or of broadening the scope of the treatment to include other bacterial infections altogether. It is now quite clear that sulphanilamide is one of a number of chemically related substances able to destroy certain bacteria in the blood and tissues even when present in very small concentration provided that the numbers of bacteria to be accounted for are also reasonably small. This is beyond dispute but its significance is by no means generally understood. A disgruntled writer to a transatlantic contemporary² regards the American equivalent of prontosil as a manufacturer's stunt and observes: "I do not see how this remedy gained such quick recognition but it goes to show that doctors are just as gullible to exploitation of cures as the laity. In the future I shall consign all ultrascientific literature to the waste basket. This letter is succeeded by one recounting the unsatisfactory results of administering the drug in a case of bacterial endocarditis due to *Streptococcus viridans*—a condition long known not to be susceptible to the treatment. Between the incredulous and the

over-enthusiastic this treatment will have a stormy passage before it finds its true level and is properly understood and applied. At the present time it is being overdone in this country by indiscriminate application regardless of the nature of the infection and by unnecessary prophylactic use in obstetrics. Except as an experiment, or perhaps as a forlorn hope, it should be reserved for infections known to be due to hæmolytic streptococci or meningococci: the dosage should be adequate and the effects carefully observed. Only so can clinical data which at present lag far behind our experimental knowledge, be usefully amplified.

A DETAILED ANALYSIS OF ROAD ACCIDENTS

THOSE chapters devoted to road accidents in the book by Dr H. M. Vernon, reviewed on another page are of especial interest in relation to the recent survey by the Commissioner of Police for the London area.¹ The points analysed include fatalities among different classes of persons, the accidents in relation to various classes of vehicles and the hourly and weekly incidence of accidents. It is shown that fatal road accidents increased by 164 per cent between 1920 and 1930 and those in which motor vehicles were involved by 198 per cent over the same period. The number of motor vehicles licensed increased by 160 per cent. Some evidence is adduced to show that the application of the Road Traffic Act of 1930 is helping to restrain this terrible accident rate and the evidence is overpowering that speed is the predominating cause of these accidents. The conclusion reached by the Commissioner for the Police that pedestrians are at fault in about 80 per cent of cases of motor accidents, the innocent motorist being responsible only for about 7.7 per cent, is difficult to credit. After all the increase in the number of road accidents has kept step with the increase in the number of motor vehicles on the roads and not with an increase in the number of pedestrians. Mr A. P. Herbert is not the only one who thinks it hardly fair to blame the poor pedestrian for not crawling about in the long grass at the side of the road while large numbers of potentially lethal projectiles are being shot up and down the fairway. One might wish as much justification blame the soldiers during the last war for the number of casualties which occurred from flying pieces of metal. An analysis of the number of road traffic accidents shows that pedestrians suffer 63 per cent of the total fatalities which occur in built up areas and 20 per cent.—Dr Vernon says only 20 per cent—in unbuilt areas. Motor cyclists on the other hand were killed more frequently in the unbuilt than the built up areas (28 per cent and 12 per cent respectively of the total fatalities) whereas passengers both pillion and non pillion and the drivers of motor cars and lorries also appear to be killed more often in the unbuilt than the built up areas. A graph (p. 106) shows that the drivers of private cars are rarely killed in road accidents.

Railway accidents are responsible for about 3.6 fatalities a year as compared with 7000 from road traffic. Dr Vernon attributes the difference to the two factors of education and compulsion. Another explanation may be that railway trains are not allowed to share roads with pedestrians. The railways have however adopted many forms of mechanical preventive methods with the object of preventing the potential victim from incurring an accident by his own action and this appears to be the keynote of all rational safety methods of

¹ Tréfontain, J. and Dime, N. and Boret, D. (1937). *Ann. Inst. Pasteur* 55: 30.
² New Eng. J. Med. April 24 1937 p. 711.

protecting the general public from accidents. It is, or should be, the ideal aimed at in the prevention of accidents in factories and mines, a matter to which Dr. Vernon devotes close and reasoned attention.

HOMEWORK

EARLY last year, after a parliamentary debate on the harm done by homework to the health of school children,¹ the President of the Board of Education said that the Government were determined to see that whatever was wrong was remedied and that the Board was actually in the middle of "a comprehensive inquiry into the whole question." The results of this inquiry have now been published² and throw light on the merits and demerits of home work as it affects three classes of schools—elementary, secondary, and junior technical. The only weakness of the report lies in the fact that the investigators did not include a medical man, so that the physiological and neurological aspects are not as fully considered as they might have been. From the evidence provided it is clear that the problem of homework is not one problem but many, for it differs in different localities and in different schools. The opinions of teachers and parents are correspondingly heterogeneous, but it is perhaps significant that teachers who are also parents are less convinced than most of their colleagues that homework, as at present understood, is a desirable institution. Parents replying to questionnaires were almost equally divided on whether homework has any adverse effect on health, with a small majority in the negative, but when the homework had been reduced a great majority testified to the benefit of the change. Consciously or unconsciously, the parent is often swayed by social or financial considerations, and the greatest incentive to strenuous homework is undoubtedly the desire of teachers, parents, and the children themselves for success in examinations, indeed in one area parents pay teachers to coach pupils out of school hours, while others ask for extra work to be provided. This practice is at its worst in junior schools in preparation for special place and scholarship examinations, and could be checked if it were known that examinations in school subjects have been replaced by the use of intelligence tests for which coaching is futile. But hope of examination success is not the only factor influencing parental wishes and opinions. In one home it may be much easier to provide for undisturbed evening study than in another, one parent may wish the child to have much free time for activities beneficial to himself or to the household, while another may prefer the child to have "something to occupy his mind" or to "keep him out of mischief." One of the few medical opinions quoted in the report is that of an assistant school medical officer, that "during April and May there is every year a marked rise in the number of cases of nervous and physical disorders brought to his notice"—a rise which he attributes to anxiety over the examinations. The investigators' own conclusion is that no homework should be set to children under 12 years of age. In the secondary and junior technical schools the trouble where it exists, is thought to be due primarily to defects of organisation and arrangement, and for these older pupils some reservations are made, but in general it is thought that preparation—i.e., homework or its

alternatives—should not be done on more than five nights a week and preferably on four only, and that the hours per night should be limited to one for those under 14 and to one and a half for those above that age.

The absence of medical experience is again almost the only fault to find in a book³ which describes inquiries at the City School, Lincoln, and contains a striking chapter on the good effects of substituting preparation at school for the ordinary work done at home. The medical aspect becomes especially obvious when one thinks of the needs of individual children suffering from myopia or some other disability likely to be increased by too strenuous a pursuit of higher education.

SURGERY OF ADHERENT PERICARDIUM

IT is more than thirty years since Delorme first proposed the separation of an adherent pericardium from the heart by open operation, and almost as long since Rehn and also Sauerbruch first successfully excised the pericardium, but it was not until the comprehensive paper of Volhard and Schmieden⁴ that operative indications and methods were clearly defined. Paul White,⁵ in his St. Cyres lecture of 1935, also gave a full clinical account and described, among others, ten cases of resection by E. D. Churchill, of which six were completely cured and one benefited considerably. Mr. Pilcher's excellent result described on p. 1223 should stimulate the more frequent diagnosis of a syndrome which, though admittedly rare, must still claim victims in this country as well as in America and on the Continent. A patient showing chronic congestive heart failure with ascites and swelling of the legs, and with a heart that is radiologically smaller than normal or at the most not grossly enlarged, probably has constrictive pericarditis, if there is also a constant increase of the venous pressure in both upper and lower extremities the diagnosis may be made with confidence. In the early stages the process may be arrested and natural compensation may be effected, but too long a delay before operation may present the surgeon with an insoluble problem, for the pericardium may be so adherent that separation is quite impossible. Johnson⁶ has recently written on the use of kymography—which demonstrates the mode of contraction of the heart—in the early diagnosis of the syndrome, and this method of investigation would have the additional advantage of distinguishing between intrapericardial obstruction of the cava and that due to some process beneath the diaphragm. Cranfield and his associates have reported⁷ an interesting autopsy in which the condition was associated with tuberculosis of the lungs. Although they could find no active tuberculous foci in the pericardial scar it may be mentioned that the onset of a generalised tuberculosis has sometimes spoilt the good immediate results of separation.

The risks of operation must not be minimised, but some of the important dangers can now be avoided as a result of Schmieden's work. When it is remembered that he could show patients leading active lives six years and four years after pericardectomy,

¹ Experiments in Homework and Physical Education. By A. Sutcliffe M.A., B.Sc. Head Master the City School Lincoln and J. W. Canham M.A. Science Master at the School London. John Murray 1937. Pp. 191. 4s. 6d.

² Volhard P. and Schmieden V. (1923) *Klin. Wochschr.* 2, 5.

³ White P. D. (1935) *Lancet* 2, 539, 597.

⁴ Johnson S. E. (1935) *Surg. Gynec. Obstet.* 61, 169.

⁵ Cranfield H. V., Gwyn N. B., Anglin G. C. and Norrish A. C. *Canad. med. Ass. J.* 1937, Mar. p. 449.

¹ See *Lancet* 1936, 1, 454.

² Homework. Board of Education Educational Pamphlet No. 110. London: H.M. Stationery Office, 1937. Pp. 72. 1s. 7d.

it is hard to justify the denial of surgical relief to a patient otherwise condemned to a distressing period of invalidism and to an early death.

OCCUPATIONAL THERAPY

THE value of occupational therapy in fostering self-confidence and desire for renewed health in patients with nervous as well as mental diseases was emphasised by Dr Wilfred Harris on May 20th at a sherry party at Chester terrace organised by the Ladies Guild of the Hospital for Epilepsy and Paralysis, Maida Vale (in future to be called the St. Marylebone Hospital for Nervous Diseases). Lack of occupation he said, tends to aggravate such conditions as depression or insomnia, and the functions of weak muscles and mental process are still further impaired by disuse. The provision of occupational methods of treatment enables the limbs and the mind to be exercised without the patients realising that they are doing work or being set a task. These methods have been developed and systematised since the war in many large mental hospitals, at some of which more than 90 per cent of the patients are constantly employed in various handicrafts such as weaving mat or rug making, knitting sewing and embroidery, bookbinding, making paper flowers and bags and Cellophane or string belts and wood carving, basketry and raffia work apart from kitchen and laundry work and the outdoor occupation in the gardens and farms. It is found at these hospitals that noisy troublesome and destructive patients become quiet social and productive while much less hypnotic and other sedative drugs are required. Dr Harris said that occupational treatment is also being used at certain general hospitals. An Association of Occupational Therapists is now being formed in England on the lines of those organised in America, Canada and Scotland, schools are being started such as the Dorset House School at Clifton and one which Miss Tarrant who demonstrated the work taught after Dr Harris's address and Miss Rivett have opened in London. The educated women trained at such schools are later employed to supervise the patients at their work, to teach them and the nurses the various handicrafts and to select occupations suitable for types of patient requiring sedative or stimulant work or exercises for certain muscles. Co-operation between the medical staff and the nurses with the occupational therapist is of course essential, and also should be supplied with details of the patients' ailments and their special needs. Games for small classes with the medicine hall and rhythmical physical exercises done to music are of value to patients able to walk about. The St. Marylebone Hospital for Nervous Diseases is, according to Dr Harris, one of the first hospitals in England other than mental hospitals to adopt this form of treatment, and although initial expenses have to be met it is hoped that once started the treatment will more or less pay its way.

SUPPLY OF BLOOD TO THE WOUNDED

BLOOD transfusion services—now a necessity in hospital—reach their greatest importance in war, which as Sokolowski puts it represents a traumatic epidemic. The steps taken by doctors in Spain to cope with such an epidemic are described in a contribution by one of them to an international medical journal published in Prague.¹ Remarkably, somewhat bitterly that for countries that can enter on

war when they wish to do so the adaptation of services is comparatively simple the author points out that the plan now generally favoured is to ascertain the blood group of every soldier and when he is wounded provide him with blood either from the slightly wounded or from groups of voluntary donors who can be brought up to the front line when required. The use of cadaver blood would be very awkward on active service because it has to be collected within six hours of death and dealt with in a way that may present difficulties at the front. In Barcelona, before the civil war, there were a few hospitals with excellent transfusion facilities, while others had none of their own. Faced with a war which was unforeseen without any pre-existing army, and with no regular organisation the doctors found it impossible to test the blood groups of all the combatants though much is done by the goodwill and keenness of surgeons at advanced posts. Instead of looking for donors at or near the front, the medical authorities now send up blood from Barcelona obtained from carefully selected volunteers (mostly young women) whose help is invited by radio. A special correspondent of the *Manchester Guardian* on May 7th described how the blood is collected in sealed glass ampoules, containing up to 300 ccm under a pressure of two atmospheres. The tip of the ampoule enters a rubber tube, and at the other end of this tube (which contains a filter a tap and a glass section so that the flow of blood can be observed) is an injection needle sealed in glass. The blood in the ampoules is gradually cooled to 0°C and they are kept in refrigerators at 1-2°C till required. The temperature is then slowly raised to blood heat the tip of the ampoule is broken inside the tube, and the needle is unsealed and inserted into a vein in the usual way. In Aragon transfusion is seldom done in the front line posts, but usually at the casualty clearing stations and apparently it is also done if need be, on the late motor-car and railway ambulances. The daily supply of blood in ampoules from Barcelona which has been organised by Dr F. Duran is stated as 42 litres. It goes to the front in cans fitted with refrigerators and keeps for a fortnight. On the central and southern fronts according to the *Manchester Guardian* the service is different in that the blood is not supplied under pressure but has to be pumped into a vein in the ordinary way. But here as in Catalonia and Aragon blood is if possible sent up to the military hospitals from donors at the base. Elsewhere it has been necessary to look for suitable donors in towns and villages close to the lines.

BASSINI AND HIS OPERATION

FIFTY years ago Edoardo Bassini revolutionised the treatment of hernia by inventing an operation which reconstructed the anatomical relations of the inguinal canal.¹ The principles of his method were at once accepted and so much a matter of commonplace have they become that it is hard for surgeons to believe that less than fifty years ago operation for hernia was all but a complete failure. This fact is indeed a little astonishing for although reconstruction of the posterior wall of the inguinal canal was not done before Bassini did it, ligature and excision of the sac was a recognised procedure, and in young adults with good abdominal muscles complete removal of the sac should have sufficed to give a proportion of permanent cures. The

¹ A paper on the role of the splanchnic in the development of inguinal surgery by Drs L. V. Zimmerman and H. P. Heller appears in *Surgery, Gynecology and Obstetrics* for May 1937.

¹ *Internationale Artliches Bulletin* May-June 1937 p. 43.

explanation seems to be that operation for hernia was held in disrepute and that the surgical text books were unenthusiastic. There was a definite mortality and an appalling percentage of failures. Bassini was the first surgeon to report a long series of cases with few recurrences. His record of 251 operations for non strangulated hernia was published in the *Archiv für klinische Chirurgie* of 1890, and it was this paper that gained international acceptance for his operation. In this series he had had no operative deaths and his follow up showed only 7 recurrences. The first report of the operation was made before the Italian Surgical Society in Padua in 1887. Bassini's approach to the problem was essentially anatomical. There were three objectives in his operation: high ligation of the sac, reconstruction of the posterior wall of the canal, and restoration of the obliquity of the canal, on which depended the valve like action of the anterior and posterior walls in closing the passage. His original operation differs only in minor details from that commonly practised to day. He dissected the posterior wall layer by layer, and sutured fascia transversalis, transversus abdominis, and internal oblique to the upturned edge of Poupart's ligament starting his row of sutures at the inner side of the wound and working upwards and outwards so as to push the internal ring, as it were, outwards and away from the external ring. The external oblique was then sutured in front of the cord. In the other operation most commonly described in text books (Halsted's operation) all layers are sutured behind the cord, and the original obliquity of the canal is ignored.

As mentioned in our last issue, the University of Padua is celebrating the fiftieth anniversary of Bassini's operation by publishing two volumes of "Writings on the Surgery of Hernia" which will include Bassini's original papers. Bassini was appointed to the chair of surgical pathology at Padua in 1882, and was made professor of clinical surgery in 1888, so that the University of Padua can claim much of the glory. But perhaps other countries have some say in Bassini's success, for he studied abroad in Vienna under Billroth, in Berlin under Langenbeck, and in London under Lister and Spencer Wells, being one of the first surgeons to introduce antiseptic surgery to Italy. British surgeons have been invited to the special meeting of the Italian Surgical Society on next Sunday in Padua at which problems of hernia surgery will be discussed.

VOLUNTARY REMOVAL FROM THE REGISTER

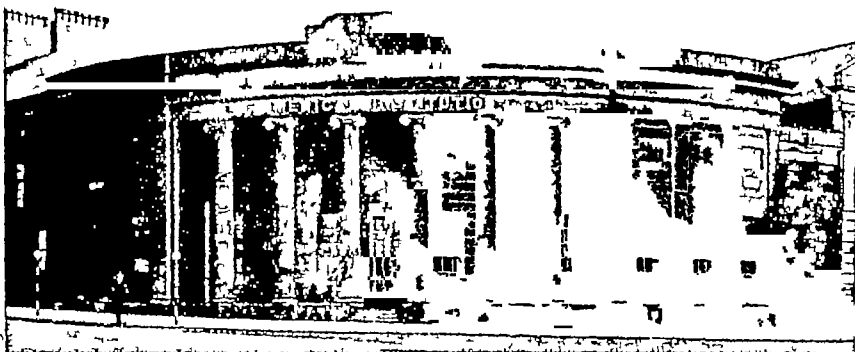
UNDER standing orders adopted in 1887 and amended in 1909 the General Medical Council has allowed registered medical practitioners to have their names removed from the Register at their own request. Last week end it was announced that the Council had been advised that it had no power to make standing orders for this purpose, the orders have therefore been rescinded. To allow a practitioner to apply himself for removal of his name is a concession which is possibly capable of abuse, inasmuch as he may take this step to avert the Council's disciplinary jurisdiction. Though the case is not quite parallel, there was recent litigation in the Court of Appeal over a police official who sent in his resignation which was accepted as from a particular date. After the resignation had taken effect, the town council under which he had served purported to dismiss him on disciplinary grounds. The court held that there was no power to take such action against a man who had already resigned. To return

to proceedings which are more fully comparable, it is worth noting that the Dental Board's regulations provide for non disciplinary removal from the Dentists Register. The Dentists Act of 1921 authorised the Board to make regulations "with respect to proceedings before the Board in connection with the removal from, or restoration to, the Register of any name." The regulations require that the dentist who applies to have his own name removed shall make a statutory declaration that he is not aware of any reason for proceedings which might result in his name being erased without his consent. Although the Dentists Act does not seem specifically to authorise such applications by dentists themselves the Solicitors Act has a definite section permitting solicitors to apply. A similar clause is to be found in the Solicitors (Scotland) Act of 1933. In England, under Section 5 of the Solicitors Act of 1932, an application by a solicitor to procure his name to be removed from the roll is made to, and heard by, the Disciplinary Committee of the Law Society. Rules of procedure, sanctioned by the Act, require him to set out the reasons why he wants his name removed and to support them in an affidavit in which he has to declare that he is aware of no cause for any application that he be struck off the roll or suspended from practice. Unless the committee otherwise directs, letters from two practising solicitors to whom the applicant is personally known must accompany the request. The committee has power too to require him to advertise the fact of his application and the date of the hearing. Provision is made for objections to be raised. These precautions seem sufficient to prevent abuse. It is reasonable to allow a professional man to ask that his name be taken off the professional register for non disciplinary reasons. The fact that in the case of the solicitors Parliament expressly sanctioned such a course of action presumably creates the inference that no such rules may be made where, as in the case of the Medical Acts, Parliament was silent on the point. In spite of the curious suspicion of some of our legislators who believe that every proposal affecting the medical profession is an attempt to bolster up monopoly, there seems no reason why Parliament should not now expressly provide for the registered medical practitioner the facility already conceded to the solicitor.

In the rearrangement of the Cabinet following Mr Neville Chamberlain's appointment as Prime Minister Sir Kingsley Wood retains the Ministry of Health, but Mr R. H. Bernays succeeds Mr R. S. Hudson as its parliamentary secretary.

In a presidential address to the seventh English speaking Conference on Maternity and Child Welfare in London on Tuesday Sir Kingsley Wood announced that it has just been ascertained that last year the number of maternal deaths per 1000 living births in England and Wales was 3.81, compared with 4.11 in 1935. This is the lowest rate since 1922.

The death is announced of Sir Ernest Morris at the age of 71. On his retirement in 1930 he had been house governor at the London Hospital for 27 years. Originally transferred from St Thomas's Hospital as chief pharmacist, he was early associated with the late Lord Knutsford in installing new operating theatres and in training the theatre staff in new methods of asepsis. He was later appointed secretary and then house governor of the hospital and wrote its history. In August 1914, he was lent to the War Office to assist in equipping hospitals at the front. He was made C.B.E. in 1920 and knighted in 1932.



SURGERY 100 YEARS AGO*

By R E KELLY CB MD FRCS

PROFESSOR OF SURGERY IN THE UNIVERSITY OF LIVERPOOL
AND SENIOR SURGEON LIVERPOOL ROYAL INFIRMARY

CENTENARIES are for remembrance and in the centenary year of the Medical Institution I thought it would interest the members if I attempted a picture of surgery a hundred years ago.

Before however I come to the purely surgical aspect of 1837 it will be well to recall the unrecorded background against which the surgeon of the time carried on his work and to remind you of the subjects of his thought, his conversation and his interests.

Starting his career as an apprentice he would have attended one of the two anatomical schools in Liverpool, walked the hospital like Bob Sawyer and passed his qualifying examination as a Licentiate of Apothecaries. Possibly he would have journeyed to Edinburgh or London taken the membership of the Royal College of Surgeons and then if his aim had been to become a surgeon visited Paris to see the work in the Hôtel Dieu. He might easily have had some war experience in the Navy and he would have returned to Liverpool to await an appointment at the Dispensary or the Infirmary. He would have had a large and mixed general practice which would have brought him into intimate contact with all types of patients.

Standing on St James's Mount with a rich ship owner he would have gazed through a forest of masts at the busy scene of the Slovinc crowded with shipping and watched the majestic sweep of the latest arrival at its anchorage. The talk would be of freights cotton the abolition of slavery the Reform Act and the new railway. Then descending the hill to the narrow crooked and noisome slums to attend a fever case in a cellar dwelling he would hear of reduced wages the difficulty of rearing children and the high cost of clothes fuel and light. Illuminating gas had only recently emerged from its primeval chaos to a municipal usefulness, and was used solely for street lighting street lighting

was indeed necessary as even in towns one fifth of the streets were never cleaned, drained or even paved. Plumbing though Harrington had invented it centuries before, was not extensive. Even if our surgeon had lived in one of the Georgian mansions fringing Everton Hill—the elegant district—he would have inhabited a house devoid of a bathroom. Envelopes and cigarettes were among the uninvited necessities of life and in the list of the newer luxuries which had been the ruin of the country Peacock had to fall back on blameless tea late dinners and the French Revolution.

* * *

A good idea of surgery is given by the masterly lectures of the famous Astley Cooper published in the twenties. Inflammation hemorrhage and ulceration occupy a disproportionate amount of space. Bleeding was still popular especially in head injuries. There is a record of one patient who recovered after 130 oz of blood were removed in the space of 11 days. Aneurysms must have been exceedingly common. Astley Cooper probably tied most arteries in the body and on one occasion actually tied the abdominal aorta though without success. He had seen seven separate aneurysms in one man. Although he dealt with hundreds of aneurysms in men he records only 8 cases in women. He was aware of the dangers of secondary hemorrhage when the usual long ligatures came away and on one occasion he actually used a catgut ligature and cut the ends short. It was for a popliteal aneurysm and the artery was the femoral. No suppuration followed. He tried the same method several times subsequently but was never again able to prevent suppuration. What a tremendous observation this was!—and how near to a great discovery! The world had to wait for 40 years before the genius of Lister unravelled these conflicting results.

* * *

Astley Cooper's chapter on hernia shows that the only important operation for its relief was the operation for strangulation. Before any operation was advised the unfortunate patient was given a tobacco enema to relax the parts. He was then strung up inverted on the back of a porter back to back with the calves resting on the porter's shoulders. Cold water was then freely poured over him. If

* From a presidential address to the Liverpool Medical Institution on May 31st on the occasion of its centenary. The full text appears in the *Liverpool Medical-Chirurgical Journal* (1937) 43.

after all this, taxis failed, operation was done and the strangulation reduced. Surgeons had a holy dread of the peritoneum, and the abdominal cavity was never entered without misgivings. Should the bowel have perforated, then the wound was merely opened like an abscess. The few who recovered from this operation were left with a fecal fistula which was later treated with a Dupuytren's enterotome, that ingenious instrument invented a century before Paul's method of enterectomy.

There is an amusing description in this same chapter on hernia of a butcher who had to be medically examined for the militia. He produced in himself a very large artificial scrotal hernia by nicking his skin, applying a blow pipe to the hole, and blowing himself up until the surgical emphysema was large enough to mislead the Army authorities. The method was then in use for flaying animals, and is still used by whalers on the harpooned whale to keep it afloat.

Hydroceles were tapped and sometimes injected. Astley Cooper's favourite injection was port wine. This reminds me of some interesting Lancastrian reminiscences published in 1837. There is an account of a surgeon who, whilst awaiting the effect of a tobacco clyster in a case of strangulated hernia, consumed the best part of a bottle of port. This gave him such courage that, with his first cut, he sliced the integuments down to the gut and perforated the bowel. "Not a word or exclamation was uttered, but everyone expressed by a vermicular movement that the affair was desperate. The surgeon laid down his knife—the gazers vanished, the wound was dressed, the woman put to bed, and, in due time, encased in her coffin."

The great operation for the surgeon 'appears to have been the cutting for bladder stone.' The operation of lateral lithotomy, introduced into England by Cheselden, probably from Frère Jacques' work on the Continent, was really an operation of fine skill. It had to be performed on a squirming man trussed up and supported by two or more strong assistants. The knife had to engage the sound at a proper depth in a bleeding wound. The direction of the cut had to be so exact that neither the bulb, the rectum, nor the pudic artery was cut. The enlargement of the prostate must have been a common additional complication, and perforation of the bladder by the sharp end of the gorget often resulted in the stone finding its way into the abdominal cavity and the whole operation had to be done in seconds or minutes. Bland Sutton once said that the Spanish bull fighter had to aim at a target on the side of the bull's neck no larger than 4 cm in diameter. The extremely rapid operation of lithotomy on a sentient patient must have entailed the same anxieties, and demanded the same skill and accuracy as the coup de grace of the matador.

* * *

The two great Liverpool surgeons of the eighteenth century were Henry Park and Edward Alanson. Park was the first surgeon to suggest excision of the tubercular joint instead of amputation, and Alanson the first to improve the method of amputation. Alanson was well ahead of his time. As early as 1779 when only 32 he published his great work. It is said that he always washed his hands and instruments before an amputation. Many of his cases healed by first intention, and he gave details of 40 consecutive amputations without a death, a most brilliant record for that date. He suggested country hospitals, iron bedsteads, clean bed linen and open

windows. Some years ago Mr R W Murray gave us a delightful account of his life, and in the recent history of Bickerton you may read how modern were Alanson's ideals.

Park, Alanson, and another surgeon called Lyon conceived the idea of a reading club about 1770. They proposed to buy new publications conjointly, and divide the books at the end of each year. Before the plan was instituted the physicians joined them, the books were deposited in a room in the Infirmary, which became the nucleus of the first medical library.

* * *

In 1833 John Rutter, a quaker, the foremost physician of Liverpool at the time, thought that the Medical Society and Library were in need of a better house. He prevailed on the mayor and corporation to give to the doctors in Liverpool a free lease on a piece of land at the corner of Mount Pleasant and Hope street. This land had been a bowling green and was valued at £557. He raised funds for the building, which was to contain rooms for both the library and a lecture theatre for debate. He persuaded the corporation not only to give a lease of the land at a peppercorn rent, but to give a grant of £1000 towards the cost of the building. Rampling was the architect. The building cost £4000. The doctors themselves subscribed over £1000, and the lay public £242.

Precisely on this day, May 31st, one hundred years ago, our building was opened. There was then a debt of £900 on it, but this was wiped off by a bazaar organised by Mrs Dawson, the wife of one of the Infirmary surgeons.

Rutter lived only a year after accomplishing this great work. He was our first president. His ambition was that this should be a place which would promote the union and the interests of doctors, the health and welfare of the community, a place for study and mutual instruction, and a habitation for the library.

All these aims have been accomplished, and should Rutter, looking down from the Elysian fields, be aware of our meeting to day, he will, I think, be as proud of this, his only child, as we are of honouring his illustrious memory.

Liverpool Medical Institution

1837—1937

"What Does, what Knows, what Is, three souls,
one man"

WHAT better terms of reference could a medical society have than the gloss of Theotypas, in Robert Browning's "A Death in the Desert," which develops and expands this doctrine? For medicine is not merely the practical work of tending the sick, nor even the intellectual excitement of studying disease, it is warmed and animated by humanity, in a common human experience and endeavour. In this uneasy modern time of mass movements and the despising of the day of small things, when institutions and abstract ideologies are proclaimed in high places as more important than persons, it is wholesome to recall that medicine stands where it does because of the lives and achievement, through the ages, of a great host of individuals, some brilliant with genius, but most of them ordinary folk—"so little starres as have no name, no knowledge taken of them."

It is just a hundred years ago that the founders of the Liverpool Medical Institution met together for

the first time in the present dignified building which has given a local habitation and a name to the more corporate activities of those who practise the art of medicine in and about Liverpool. They foresaw it as the common centre of every useful and honourable professional undertaking—from the securing to medical men of a fair and just remuneration for their services to the purposes of study and mutual instruction and an authoritative helpfulness in all matters affecting the health of the town. As a necessary foundation for these activities they hoped that it would be a means of uniting the different members of the profession in a firm and compact body disposed at all times to co-operate strenuously and cordially in the prosecution of every measure which may conduce to the interests of all.

The idea of establishing such a common centre grew naturally (and surely inevitably) from a small medical reading club which was the origin of the present medical library housed in the Institution. It grew inevitably for Francis Bacon's words are especially true of medicine. Natural Abilities are like Natural Plants that need Pruning by Study; and Studies themselves do give forth Directions too much at large except they be bounded in by Experience. For the physician scientific facts are but the food which must be metabolised if the mind is to bring forth fruit. A man must always be busy with his thoughts; he must exercise his intellectual powers as earnestly as an athlete trains his muscles if judgment is to mellow. It is given to very few to live alone and yet keep a sense of proportion; most of us need the criticism and help of our fellows and thus we can get in calm, disinterested and sincere discussion. In a live medical society men bring their knowledge and experience into the common pool not to display but to convey information. It is indeed the tradition of our ancient and honourable brotherhood that a man shall gladly and honestly submit for the judgment and approval of his colleagues anything which may help to increase the body of medical knowledge. And when a man reveals to his fellows what he knows, he cannot but reveal also to some extent what he is. More important even than discussion and conference is the fellowship of a medical society with its stimulating contacts of personality with personality. Here especially may be nurtured and realised the conception of medicine as the profession of a kindly courteous, sincere, and cultivated gentleman.

This centenary is therefore the anniversary not only of the foundation of a building but also of a living medical fellowship. Those who will meet within its walls to commemorate the great occasion will surely feel that they are compassed about with a great cloud of witnesses. As they cast their eyes back through the years they will rejoice at all excellence of achievement and they will look



The Orthopaedic Memorial Library. The inscription reads: To Hugh Owen Thomas and Robert Jones the founders of orthopaedic surgery.

forward with solemn resolve to maintain the fine traditions of their forebears.

The Celebrations

The programme began on Sunday afternoon when a service was held at the Cathedral attended by members of the Institution in academic dress and when members of the Guild of St Luke, SS Cosmas and Damian met at the Catholic Cathedral site for benediction. On Monday afternoon at the Institution honorary membership was conferred on the Presidents of the Royal College of Surgeons of England, of the General Medical Council of the British Medical Association, of the British College of Obstetricians and Gynaecologists and of the Manchester Medical Society as well as on Sir James Barr, Mr C Thurstan Holland, and Mr Frank T Paul. The new honorary members were introduced by Prof. John Hay. After that Dr Hugh A Clarke was congratulated on the attainment of his jubilee of membership. Prof. R E Kelly then gave his presidential address. In the evening the centenary dinner was held at the Adelphi Hotel. On Tuesday afternoon the new library of orthopaedic surgery, commemorating Hugh Owen Thomas and Robert Jones was formally opened and Mr W Rowley Bristow, president of the British Orthopaedic Association, gave the Hugh Owen Thomas memorial lecture. The programme ended with an At Home in the town hall given by the Lord Mayor.

MANFIELD HOSPITAL.—This institution is endeavouring to raise £10,000 for a new women's ward. At present extra beds for female cases have been provided by alterations to the balconies of two wards and accommodation is strained to the utmost.

TRANSFERENCE OF A CROFTON HOSPITAL.—St Mary's Hospital Crofton will remain in trust of the Crofton mothers and infants welfare centre and had its administrative work transferred to Crofton corporation and the expenses of the institution will be paid from the general rate fund. In order that the hospital may qualify as a training school under the Central Midwives Board a resident medical officer will be appointed.

PUBLIC HEALTH AND HYGIENE

A JOINT ANNUAL CONGRESS

As recorded in our last issue, the Royal Institute of Public Health and the Institute of Hygiene met in joint congress at Margate on May 25th under the presidency of Lord HORDRE.

Captain G. S. ELLISTON, M.P., president of the section on State medicine and industrial hygiene pointed out that this year, a hundred years after the passing of the Act imposing registration of births and deaths, the Government was to sponsor a campaign to interest the people in the maintenance of health by increased use of the services provided by local authorities and voluntary organisations. He approved of this measure, for in most areas health services were more or less complete and further progress must come from the people themselves, for example, only 50 per cent of pregnant women went to antenatal clinics, many cases of tuberculosis were diagnosed too late, and attendance for later treatment of venereal disease was very lax. Reminding the audience that most services were promoted by the force of public opinion, he passed on to the consideration of some conditions now calling for attention. The first was chronic rheumatism, a condition about which no steps commensurate with its importance had yet been taken. Others were noise, cremation, smoke abatement, mental welfare, and child guidance.

HOUSING THE BIRTH RATE

Dr J. GREENWOOD WILSON (M.O.H. for Cardiff), in a paper on the place of the health department in housing administration, maintained that the health committee should be made the paramount committee for housing administration. The medical officer of health should be encouraged to take more interest in housing both before and after he entered the public health service, and greater use should be made of the health department in branches of administration such as allocation of tenancies, disinfection and estate social work.

Speaking on the problem of the smaller authorities in the rehousing of overcrowded families, Dr N. E. CHADWICK (M.O.H. for Hove) referred to some of the difficulties arising out of the overcrowding provisions of the 1935 Housing Act. In his district, at the time of the survey of overcrowding in January, 1936, 96 houses were found to be statutorily overcrowded, by June this number had been reduced to 69, and more recently it had fallen to 38. On the other hand, it was fully realised that fresh crowding had occurred at other houses. There were three ways in which large families could be housed—by converting two houses into one, by building new houses of sufficient size, and by acquiring existing old large ones. Houses built on sites far distant from the original home of the tenants could hardly be construed as "suitable alternative accommodation."

Dr CARYL THOMAS (M.O.H. for Harrow) spoke on certain aspects of the declining birth rate. He reviewed briefly the general situation, pointed out the effects both of a fall in population and of a changed age composition of the population, and summarised measures taken, more particularly in some of the continental countries, to arrest the decline.

FOOD POISONING MILK

Dr F. R. JONES (pathologist to the Kent county council) speaking on the epidemiology and bacteriology of food poisoning, restricted his definition to

acute gastro enteritis caused by the ingestion of food or drink that contains either living bacteria or toxic substances produced by them. Such a definition excluded botulism. Since Gærtner isolated *Bacillus enteritidis* in 1888, 26 other members of the salmonella group had been discovered. In certain cases of food poisoning however no organisms could be found, and the illness appeared to be due to the formation of a heat-stable toxin in the food. Many of these organisms were ordinarily non pathogenic, but under certain conditions of growth appeared capable of elaborating highly toxic substances. Among the incriminated were *Staphylococcus aureus*, *S. albus* (the commonest) members of the salmonella group, *B. coli*, *Proteus vulgaris*, *P. morganii*, *Streptococcus viridans*, and a micrococcus associated with milk. It was not known whether specific toxins were elaborated by the bacteria or whether the toxin was formed from breakdown products of the dead organisms, but presumably the bacteria multiplied and elaborated their toxin in the food before its consumption, the subsequent cooking destroyed the organisms but did not materially affect the toxin. Seasonal variation in incidence was less conspicuous in this type of food poisoning than in that caused by the more common salmonella type. The morbidity rate was high (75 to 100 per cent), but the fatality rate very low. The type of illness was similar but the incubation period shorter, being only half to four hours, symptoms were severe but the course was rapid and the patient recovered in two or three days. The foods most commonly affected were canned meat, potted meat or fish, and milk products, more especially cakes and éclairs filled with cream or custard. Owing to the ubiquity of the organism our inability to distinguish toxic from non toxic strains and our comparative ignorance of conditions suitable for the production of toxins, outbreaks of poisoning of this kind were not only difficult to investigate but also harder to control.

The subject of milk was discussed from the point of view of the producer by Dr L. MEREDITH DAVIES (M.O.H. for Devon) and as it affects the consumer by Dr H. C. MAURICE WILLIAMS (M.O.H. for Southampton). Dr Davies dwelt particularly on the financial troubles of the farmer producing different types of milk. Here he thought lay the difficulty in obtaining a satisfactory milk supply, and until the margin of profit to the producer was considerably increased the bare essentials for the production of safe milk could not be realised.

CHILDREN

The MARCHIONESS OF READING, presiding over the section of women and children and public health, spoke on the 'pre school child.' She thought that all blocks of flats should be fitted with nurseries on the top floor or on the roof opening to a roof garden, or that children's homes should be attached to each block at which mothers could leave their children for short periods. She submitted that the combination of a day nursery and nursery school is the ideal provision, and referred to the many advantages of the large unit from the standpoint of cost and efficiency. Now that these were run on open air lines there was little risk of infections spreading among the children.

Colonel R. A. BRIDGEMAN read a paper on infant feeding in warm climates. He strongly advocated the use of sweetened condensed milk, as being stable, easily transported and not easily tampered with, and quoted many French authorities in support of this.

view. He also defended the use of cane-sugar in infant feeding.

Dr WILFRID SHELTON (physician in charge of the children's department King's College Hospital) speaking on diet and dietetic indiscretions after infancy dwelt more particularly on the period between the child's first and second birthday—the time he said when errors both of omission and commission are most likely. By the child's first birthday it should have abandoned the bottle and have its feeds at the times of the adult. He deprecated the giving of cream to any healthy child; the ingestion of more than one pint of milk daily was a mistake because it resulted in the refusal of other food. Dr Sheldon preferred cod liver oil to any of the vitamin A concentrates because it carries no risk of over dosage because it has a food value of its own and because it contains the complementary vitamin D.

In a discussion on the staffing of antenatal and infant welfare centres Dr C K J HAMILTON (physician in charge of the children's department, Charing Cross Hospital) envisaged the need of certain auxiliary services as essential to the ideal functioning of an infant welfare centre including a breast-feeding clinic, a play centre, and an observation ward. Dr VYCKE BORLAND (M.O.H. for Bethnal Green) said that the aim of the services was to make maternity as safe as possible and afterwards maintain good health in mother and child.

PREGNANCY TOXEMIA

Miss MARGARET BADSEN (gynaecological surgeon to the South London Hospital for Women) speaking on albuminuria and eclampsia quoted Prof F J Brown's finding that a blood pressure reading of over 130/70 is usually the earliest sign of toxæmia often preceding albuminuria by several weeks. She would treat all cases with readings of over 130 as suspect. While it was true generally speaking that the more the albumin the worse the case, the converse did not hold, for cases with only a trace might prove very severe. The risk in albuminuria was not only a risk of eclampsia but also a risk of permanent damage to the kidneys. Such damage depended not so much on the severity of the illness as on its duration and Miss Badsen recommended that toxæmia should never be allowed to continue for more than two or at most three weeks. As symptoms rarely appeared before the thirty-second week of pregnancy the only remaining treatment of an obstinate case—namely termination of pregnancy—did not necessarily mean the loss of the child. In any event the effect of the toxæmia is more damaging to the infant than the prematurity.

EARLY DIAGNOSIS OF CANCER

Dr ELIZABETH HURDON (director of the Marie Curie Hospital London) in a paper on the diagnosis of cancer in relation to its prevention said that in no other department of medical research had so much been discovered within recent years. It was probable that cancer did not arise in perfectly healthy tissue but in tissues or organs which had been the seat of pathological change. The list of chemical, bacteriological, mechanical or physical factors which operated as predisposing causes was being extended and the public needed to be educated to the importance of these factors, so that where necessary they would seek medical advice as to their removal. Dr Hurdon was hopeful of benefits accruing from statistical investigation pointing out that whereas the incidence of cancer of the non-exposed

site was the same in all social classes that of disease in the exposed sites—the skin, larynx and upper alimentary tract—showed considerable increase in incidence on descending the social scale. This suggested that other environmental conditions, such as defective hygiene might be responsible for the greater incidence among the poorer classes.

NUTRITION AND PHYSICAL TRAINING

In the absence of the president of the section of nutrition and physical training Sir STANLEY WOOD WALK (physician to Westminster Hospital) his address was read. He pointed out that just at the time that there was more leisure, there were more difficulties in the way of obtaining enough healthy physical exercise each day. While commending the national movement towards more and better physical training he urged that the aim should be a supple body with mind and muscle closely co-ordinated—a harmony of bodily function leading to perfect rhythm and balance. This meant that the body must be sufficiently nourished and he thought that attention should be paid to optimum rather than minimum diets. Sound nourishment however did not merely depend on a sufficient supply of food; there were many dietetic crimes such as the bolting of meals, inefficient cooking, the presentation of the same dishes with monotonous regularity and the belief that the most expensive food was necessarily the most nutritious weight for weight. Sir Stanley looked forward to the time when every housewife as a result of tuition at school will be able to buy food economically, cook it conservatively and well and serve it in well balanced physiologically adequate meals.

Prof S J COWELL (professor of dietetics in the University of London) said that though there was not much gross malnutrition in the sense of semi-starvation faulty diets were probably responsible for much more ill health and disease than was imagined only a few years ago. The problem of malnutrition in this country was much more a problem of deficiency in essential food constituents than of deficiency in total supply of food. He touched on the importance of the recently discovered tests for minor degrees of vitamin deficiency—vitamin A by impaired vision in dim light, vitamin B by its concentration in the blood; and vitamin C by its estimation in urine—and said that these should result in the detection of sub-optimal nutrition not apparent on clinical examination. He summarised the relation of nutrition to infection by suggesting that the course of certain chronic infections such as tuberculosis was related rather closely to the state of nutrition and that many acute infections especially in childhood, ran a more favourable course in those whose previous diet had been good. His conclusions on the relation of diet and dental decay were that diets rich in protective factors, given during the whole period of development of the teeth and continued throughout life would not only encourage the formation of sound teeth but would do much to prevent dental decay. There was increasing evidence that an inadequate supply of protective foodstuffs initiated or predisposed to some of the disturbances of pregnancy such as osteomalacia, muscular cramps and possibly some of the toxæmias. As a practical measure it was unnecessary to instruct the public in the exact amount of the various constituents of food required but they should get used to the term protective foods as being those that are rich in mineral elements and vitamins likely to be relatively deficient in common diets. They must learn that a good health giving diet should

contain a large proportion of its total energy value in the form of protective foods, the younger the person the greater being the proportion.

Miss E. M. WIDDOWSON (research biochemist at King's College Hospital) referred to the importance of the minerals in maintaining osmotic pressure and acid base balance, and in regulating all chemical processes. Of the fifteen different mineral elements in the body, each of which had its own part to play, deficiency was most commonly found in calcium, iron, phosphorus, and iodine, the two most often lacking in diets in this country being iron and calcium. To supplement calcium deficiency she advocated the greater use of cheese, milk, eggs, green leaf vegetables, and nuts, of these, milk was the most important single source. Iron was found mostly in meat (especially liver), eggs, brown bread, and green vegetables. There was often a deficiency of iron during pregnancy. It was important that it should be given in a form in which it would be available to the body.

TUBERCULOSIS

Dr R. A. YOUNG (consulting physician to the Middlessex Hospital) gave a presidential address to the section of tuberculosis. He spoke particularly of the need for early diagnosis and for teaching the laity to think bacteriologically. The undiagnosed case was dangerous to the community and he pleaded for the more thorough examination of all patients suffering from chronic bronchitis, from persistent cough and phlegm, from hæmoptysis however slight, from pleurisy or from unexplained loss of weight or condition, or evening tiredness. Clinical examination should be supplemented by bacteriological tests and radiography.

Dr F. G. CHANDLER (physician to St Bartholomew's Hospital) submitted that prolonged isolation of tuberculous patients was often unnecessary, they could return to their homes if they and their relatives understood how the disease was spread, the necessity for care of the cough and the phlegm, and of handkerchiefs, pillow slips, and sheets, and the importance of ventilation and fresh air.

Dr J. G. JOHNSTONE, speaking on tuberculosis of joints, said that the guiding principles in local treatment were to arrest the active disease, by stopping movement of the affected joint, and reduce the functional disability by immobilisation in the

correct position, and by preventing deformity in any other joint.

Dr L. L. SANDILAND (medical superintendent of the East Lancashire Tuberculosis Colony) dealt with the after care and re-employment of the tuberculous patient. The chronic tuberculous population could be divided into the 15 per cent of chronic invalids who would always remain a medical problem for others, the 50 per cent who could return to their former employment or some modified form of it, and the 35 per cent who could not return to their former employment either because it was unsuitable or because they could not compete with healthy men. The last group was the one for which after care schemes were intended. The three principal forms of provision made were workshops set up by after care committees or local authorities, the employment of ex-patients on the staffs of sanatoriums or similar institutions, and the establishment of village settlements, with industries attached, where the ex-sanatorium patient could have sheltered conditions, medical supervision, and a house away from his former habitation.

RHEUMATISM

The section on rheumatism and allied diseases met under the presidency of Sir ROBERT STANTON WOODS (physician in charge of the department of physical medicine at the London Hospital). Dr SYCLAR MILLER (medical director of the Harrogate Investigation Clinic) spoke on the etiology of chronic arthritis, and Dr DOUGLAS COLLINS (research fellow in rheumatism at the University of Leeds) referred particularly to the importance of trauma and infection as etiological factors. It was a mistake he thought to ignore the local condition of the joint while concentrating on the general physiological behaviour of the arthritic patient. Dr FORTESCUE FOX (president of the International League against Rheumatism) read a paper on "vicious spirals" in chronic rheumatism. Dr JOHN POYNTON (consulting physician to University College Hospital) opened a discussion on the etiology of rheumatism in children, and Sir FRANK FOX (organising secretary of the Empire Campaign against Rheumatism) summarised the history of the development of the movement. He pointed out that insufficient attention had been paid to rheumatism, in spite of the great suffering it caused, because it lacked the dramatic element.

PANEL AND CONTRACT PRACTICE

What is a Partner?

For health insurance purposes a partner must, as prescribed by Clause 11 (8) of the terms of service, be in the position of a principal in connexion with the practice and entitled to a share of the partnership profits which is not less than one third (in Scotland one half) of the share of any other partner. An insurance practitioner recently told an insurance committee that he had taken into partnership another practitioner. When asked whether the terms of the partnership agreement conformed to the requirements of Clause 11 (8) he said that his partner was not entitled to any stated share of the profits but was in receipt of a salary which together with certain allowances, amounted to a sum greater than one third share of the profits of the partnership. The Ministry of Health expressed the view that although there was nothing in the facts set out above which necessarily negatived the existence of a partnership it might be desirable for the insurance committee

to satisfy themselves as to the position by an examination of the deed of partnership if any. The practitioners were unwilling to submit the deed for examination, and the committee felt some hesitation in accepting the view that the salaried partner could be considered in the circumstances as entitled to a "share of the profits" and they asked for further advice. The Ministry took the view that the word "salary" implied the payment of a fixed sum payable out of the profits so long as the profits were sufficient to meet it. Presumably the committee would also have to be satisfied that provision had been made for the salary of the junior partner to be increased if the profits of the partnership should increase to such an extent as to make his present salary and allowances insufficient to comply with the terms of service.

Visitation of Surgeries

The Cheshire insurance committee have been trying to arrive at agreement with the panel committee about the visitation of surgeries. They

asked the panel committee to appoint members to meet an equivalent number of members of the insurance committee to consider and report upon the general question of surgery and waiting room accommodation, but the panel committee decided to take no action. The Ministry of Health was then asked what other course was open to the insurance committee to secure the provision by insurance practitioners of proper accommodation for their insured patients. The Ministry suggested that the panel committee would hardly withhold their co-operation in the event of any specific cases being brought to their notice where it appeared to the insurance

committee that there was ground for regarding the accommodation provided as unsatisfactory. And this proved to be the position. The secretary of the panel committee said that on a complaint being made they would be glad to co-operate but they had a strong objection to a roving commission to examine anybody's premises irrespective of complaints. After some discussion it was decided that any complaint as to the accommodation in a specific case brought in duly authenticated form to the notice of the insurance committee, should be investigated by a joint committee of the insurance committee and the panel committee.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month his name can be seen later in the half yearly index

FROM TWELFTH MAN

I

To sit in the pavilion while one's betters are battling can be a disintegrating experience. For a week past I have sat in the pavilion. I have re-read all the contributions to this Grains and Scruples series from the very lively knock with which West-country Practitioner opened the innings last July to the sound and stylish display by A Medical Economist. I have been amused, instructed, stimulated—and now when it is my turn to go in I am heartened by the knowledge that if Twelfth Man edges a lucky ball between first and second slip to the boundary there is a ripple of surprised applause.

These Grains and Scruples have indeed been surprising. Here are twelve doctors (and more apparently to come) who are willing to write from five to ten thousand words about a broomstick or nothing at all. There can I think be but one reason for this. Many doctors have an unsatisfied desire for self-expression. This is the modern explanation for ill behaviour in the nursery and it explains equally well these essays which have lightened for the last eleven months the pages of THE LANCET. That doctors lack self-expression is, I believe true. Our unhappy function is too often to listen and too often when we talk it is to use vain repetitions as the heathen do. If we are having a preliminary gossip—well there is the weather or the films and when we come to the real business of the patient's health how frequently we play the same record. I doubt whether the practice of a first-class physician equals in variety the practice of a leading counsellor. It does not elicit a comparable number of mental responses nor stimulate as complicated a series of conditioned reflexes. The physician for example whose practice has an abdominal bias will in a year see some hundreds of patients with an ulcer, an intestinal carcinoma or an abdominal neurosis. How often must these patients receive advice in much the same terms.

For the mutual convenience of physician and patient it is customary to have typewritten sheets of instructions for the victim's future regimen. At the end of a hurried interview with a physician a patient of mine was handed three such sheets. A guinea a sheet. Do I pay you directly or does the money go into the slot machine? asked my patient rudely.

And how stereotyped must the reactions of lesser men become. I sit at a bridge table with a fat lady as my partner and she asks: What is your call doctor? It is with difficulty that I refrain from replying: Three rye biscuits. Take one potato where three creep in. Eat as much of lean meat of green vegetables—

Next to me sits a successful business man. Your calling makes me giddy doctor. I want to reply.

Take it easy. Avoid stress and strain. John Hunter said he was at the mercy of any man who made him lose his temper. Live within the limits of your circulation. Grow old gracefully. Make your changes of posture slow and deliberate—

My readers if any will recognise these records. They are part of our common heritage. Hippocrates played them. So we go through our professional life with our small group of conditioned responses. How worrying and how annoying it is when a patient presents a group of symptoms and signs that refuse to fit into a syndrome. As difficult as it was for Pavlov's dog when his master altered the dinner bell by a semitone. Thus it is that our minds lack elasticity and our flow of ideas is constricted. Thus it is that A Departmental Doctor wrote: Regarded at any rate as an interesting companion as a desirable neighbour at dinner the doctor was ranked considerably below the barrister and a little more doubtfully lower than the priest. Thus it is that so many were glad to accept the invitation to contribute to the Grains and Scruples series. Here was a stimulating chance for unfettered self-expression.

This unsatisfied desire for self-expression may encourage the doctor off his guard into unwelcome confession to his patient. His wish to help the psychoneurotic may also lead him to confess a like frailty. I remember a dramatic instance of this. Many years ago a physician in the out-patient department of a large hospital was examining a boy in front of a class of students. He took the lad behind a screen and after a few minutes both emerged. The physician addressed the class: I thought so. The boy's a masturbator. The boy burst out: You sneak! You said you wouldn't tell and anyway you said you did it yourself when you were a boy. Confession may be obligatory in an Oxford Group meeting but such sharing is out of place in a consulting room.

It is doubtless necessary for these Grains and Scruples articles to be temporarily anonymous.

but it diminishes their "news value" Did not A Rover write that a newspaper proprietor would pay 2 hundred guineas for signed articles by medical men in the lay press but only five guineas if they were unsigned? And would not even the readers of THE LANCET have settled down in greater numbers to relish the incisive wit of A Rover had they known he was A in person, and enjoyed more keenly the urbanity of A Departmental Doctor had they known he was B and the author of C, and delighted more in the mild humour of A Doctor in Retirement if they had known he was D and the author of E and F? They would For who can lay his hand on his heart and deny that he brings a more lively expectation to sharpen the edge of his critical faculty when he knows himself to be looking at a Goya or a Vermeer? George Robey lifts an eyebrow and the house rocks with laughter, while the innominate comedian works desperately through a few painful moments for his first laugh Still anonymity has its advantages It seems possible that someone may glance down this page finding Twelfth Man a more attractive superscription than X, and I like to think that I could not have enjoyed more keenly the sanity and wisdom, the quintessential common sense, of A Rusticating Pathologist had I known who he was He described the town where I have lived happily for ten years as a place where the sun seldom shines and listed it, as an undesirable habitation, with Central Asia, Tierra del Fuego, Arctic Canada, and Orkney

* * *

It is difficult to guess to what extent the professional journalist welcomes and to what extent he resents the incursion of the amateur into his specialty I have no doubt that the office staff of THE LANCET could have written these Grains and Scruples a great deal better than have its invited guests The late Lord Salisbury described a popular daily paper at its inception as written by "office boys for office boys"! To day it may be written by impoverished politicians, gossiping peers, pamphleteering clerics, and pseudo scientists whose standards are no more worthy than their predecessors' the office boys Not that the amateur's contribution to journalism has been entirely without value The best things in the *Times* are Bernard Darwin's weekly article on golf (it might equally well be written on darts or tiddley-winks), the fourth leader and the correspondence columns No Saturday is completely ill spent that starts with Bernard Darwin Many a breakfast table has been rescued from disaster by the fourth leader What could add more relish to the eggs and bacon than to read Winston Churchill admonishing Lord Hugh Cecil, who had apparently expressed at one time or another disapproval of Italy, France, Japan, Nazi Germany, and Soviet Russia "It must be very painful to a man of Lord Hugh Cecil's natural benevolence and human charity to find so many of God's children wandering simultaneously so far astray In these circumstances I would venture to suggest to my noble friend, whose gifts and virtues I have all my life admired, that some further refinement is needed in the catholicity of his condemnations"?

Or Prof John Hilton's strictures on certain members of the House of Commons, "Yet it is not altogether a matter for mirth that elected persons should so eagerly allow themselves to be made the butt of informants defective in hearing wits or veracity A certain amount of silliness in public life adds to gaiety and does no harm But in excess it might spell our doom" There was a long correspondence

recently in the *Times* on the value of Family Prayers This dying habit received the most enthusiastic support from clerics and retired members of the services A long, wearisome, and occasionally painful experience of Family Prayers makes me certain that the day is better begun with Bernard Darwin, the fourth leader, and letters to the Editor

In parentheses, why is it that every strange sect, every exotic enthusiasm, every society of cranks draws its chief support from retired members of the services? Is it because these admirals and generals have grown tired of discipline and orthodoxy? Or because they have learnt that the secret of happy retirement is the espousal of a cause that is predetermined to be lost?

* * *

Medical journalism, like all trade journalism, is a different cup of tea Here a small group of professionals drives a team of ill assorted amateurs (If I had been the editor of THE LANCET I should have asked A Chronicler to have completed his fascinating history of medical journalism by telling of its present difficulties, its pitfalls, its humours, and its anxieties) The job of the professional is to invite, to cajole, and to flatter these "expert" contributors, and to edit, alter, improve, or refuse their contributions This is a difficult task Most of these experts would refuse with disdain the advice that a playwright accepts meekly from his stage manager They would retire in dudgeon if they had to endure the treatment that the scenario writer receives at the hands of the Hollywood producer or even the cutting that the copy of a working journalist gets from his editor They are thin skinned, hypersensitive, of an inordinate vanity This is the first difficulty of a medical editor Why does not the scenario writer withdraw his services when his work is mutilated? *Because he is well paid* I know nothing of the balance sheet of the weekly medical journals I know, however, that they have a circulation which compares favourably with the circulation of other weekly journals and they have access to an advertising field without rival Perhaps the only way for the editor to deal ruthlessly with his difficult team would be to pay them for their signed contributions

* * *

The second difficulty for the editor of a weekly medical journal must lie in the diverse interests of his readers There must be much for the general practitioner and physician but something too for those who practise a specialty Considering those difficulties weekly medical journalism maintains an extraordinary high standard It has one fault Like all other forms of journalism there is a great deal too much of it To be presented on Friday morning with a journal the equivalent in acreage of a full length novel and another of the same size on Saturday morning must overwhelm the leisure of the least busy doctor and fatigue the most receptive mind The individual articles are often of an incredible prolixity I find the clinicians generally more verbose than the laboratory workers The researchers produce reports that are often models of lucid brevity In a recent issue of THE LANCET Dr A Q Wells filled little more than a column with his exciting discovery of tuberculosis in field voles I tremble to think how some of us would have been tempted into an excess of "windy blether" on such an occasion We should have begun with accounts of the field mouse in literature (deliciously apt quotations from Robert Burns), the varieties of

field mice, and their habits and diseases proceeded to a discussion of the *Mycobacterium tuberculosis* its identity and methods of culture indicated in a few modest pages the implications the potentialities, and the cosmic significance of our discovery and rounded the whole thing off neatly with a verbatim report of the 134 post-mortems and some decorative micro photographs

I realise that it is not necessary for me to read anything that I do not wish to read and indeed it is common enough to hear a man say "Life's too short to read articles from start to finish" I only read the summary and conclusions. It is on behalf of the weaker brethren like myself that I cry mercy. We are not so strong minded nor so wisely economical of our time. Too often like a character of Aldous Huxley's, we creep from cover to cover like a beetle through dung.

I do not doubt that a living dog is better than a

dead lion but what if the lion being dead yet roareth? I was told by a neurologist that one of his prized possessions is an article by Hughlings Jackson on the different levels of humour—the lowest level dependent on incongruities of situation and the highest level that of organised wit. The whole thesis as the bookseller's catalogues say embellished with numerous illustrations. This may not be a subject of general medical interest but why should not the medical journals reprint selections from the works of Paré Lacanec Troussseau Addison Graves Gee Hughlings Jackson and Oeler? And even the 'Regimen Sanitatis of Salerno so beloved of Taddygaddy. They might be the beginnings of a liberal education for others besides myself.

There was a distinguished Victorian who said that every time a new book was published he turned back to read an old one. The idea is a sound one but difficult of execution in a day when new books like mugs are born every minute.

CORRESPONDENCE

DIAGNOSIS AND TREATMENT OF GASTRIC AND DUODENAL ULCER

To the Editor of THE LANCET

SIR,—In his paper published in your issue of May 22nd, Dr Duncan Leys makes a number of statements which ought not to be allowed to pass without criticism.

1. He says that gastric carcinoma is relatively uncommon. This is hardly the correct term to apply to a disease from which no less than 16 000 individuals die each year in Great Britain.

2. He suggests that the greater incidence of gastric than duodenal ulcers in his series of 58 cases represents the true facts and that all statistics showing a greater incidence of duodenal ulcer are incorrect because they are founded on surgical experience. My own series of 300 duodenal compared with 114 gastric ulcers at New Lodge Clinic and Prof. Ryle's of 583 to 131 seen in private prove how unfounded is this assumption. The difference between our statistics and those of Dr Leys is almost certainly a result of the difference in the social class of the patients, gastric ulcer being relatively much more common in hospital than in private practice. Thus whereas the relative incidence of duodenal ulcer and gastric ulcers in the comparatively well-to-do as calculated from our figures is 982 to 245 or 4 to 1 combined statistics from Guy's and St. Bartholomew's Hospitals give 875 duodenal to 1013 gastric ulcers.

3. There must be something radically wrong with Dr Leys's method of testing for occult blood. Using Dr Ryle's technique for the guinea reaction and the spectroscopic examination for hematuria and acid hematin the exclusion of blood and chlorophyll from the diet is essential as otherwise a positive result is almost always obtained. Occult blood is present in 100 per cent of cases of carcinoma of the stomach and in at least 95 per cent of gastric and duodenal ulcer in a large majority of cases it is still positive for several days after the disappearance of the niche seen with the X rays and its disappearance can be regarded as the most valuable evidence short of gastroscopy in the case of gastric ulcer of the persistence of an organic lesion.

4. Few physicians of experience would agree with Dr Leys that a patient with achlorhydria and longstanding indigestion whatever the age has gastric or duodenal ulcer. He has either chronic

gastritis or carcinoma. He certainly has not a duodenal ulcer and almost certainly not a gastric ulcer as we have never found achlorhydria in any of our 398 cases of duodenal ulcer and only once in our 114 cases of gastric ulcer at New Lodge Clinic in the single exception free acid returned after a short period of dieting which it would certainly not have done had carcinoma been present.

5. Though I have often protested against the excessive employment of surgery for gastric and duodenal ulcer I cannot but be amazed to read that "perforation remains the sole indication for surgical interference." I am Sir yours faithfully

ARTHUR F. HURST

New Lodge Clinic, Windsor Forest May 26th

SULPHÆMOGLOBINÆMIA AND METHÆMOGLOBINÆMIA AFTER SULPHANILAMIDE

To the Editor of THE LANCET

SIR,—Since making our communication on sulphæmoglobinæmia and methæmoglobinæmia following administration of p-aminobenzenesulphonamide (published in your issue of May 15th) a case has occurred in which methæmoglobinæmia and sulphæmoglobinæmia were found successively.

The case was one of septic abortion (cervical smear: non-hæmolytic streptococci) in a patient aged 33. No sulphates were given and she received 30 grammes of sulphanilamide in six equal doses during the 2nd and 3rd days after admission to hospital. By the evening of the 3rd day she was very anæmic and administration of the drug was stopped. Examination of the blood at this time revealed the presence of methæmoglobin only. The blood was again examined on the 6th day when sulphæmoglobin but no methæmoglobin was found. By this time cyanosis was slight but it persisted until the 16th day after admission. Administration of sulphanilamide was recommenced on the 8th day and continued until the 16th day but only in doses of 3 g. daily and in order to minimise the risk of aggravating the sulphæmoglobinæmia the lower bowel was frequently washed out with enemata. There was no apparent increase in cyanosis or sulphæmoglobinæmia after recommencing administration of the drug but the sulphæmoglobinæmia could be detected until the 20th day. The patient had received ten minims of acid, 10 drops dil. before each dose of sulphanilamide.

We believe that only one case of methæmoglobinæmia and sulphæmoglobinæmia in the same

patient has previously been recorded (R L Waterfield *Guy's Hosp Rep* 1928, 78, 265)

These findings support our conclusions regarding the relative persistence of methæmoglobin and sulphæmoglobin in the blood and our belief that giving hydrochloric acid may increase the liability of this drug to produce methæmoglobinæmia. The fact that in some cases slight sulphæmoglobinæmia occurs apart from administration of sulphur or its compounds does not disprove that sulphur has been responsible for many of the cases of sulphæmoglobinæmia recorded after giving sulphanilamide or other drugs. Rather does it emphasise that certain substances have an accelerating action on sulphæmoglobin formation (in vivo if not also in vitro) and that when such substances are being given as drugs a high concentration of sulphur in the alimentary tract should be avoided as far as possible both by excluding its administration and keeping the bowels open with non sulphur containing laxatives.

In examining the blood of the case herein described we have, of course, made all necessary tests to distinguish sulphæmoglobin from methæmoglobin. Sulphæmoglobin and methæmoglobin did not appear to be present simultaneously in the blood.

We are grateful to Dr Thomas Archibald of Belvidere Isolation Hospital for giving us facilities to investigate this case and those previously described.

We are, Sir, yours faithfully,

JAS C EATON,
J P J PATON

Glasgow May 28th

EXPERIMENTS ON THE ÆTIOLOGY OF LUNG TUMOURS

To the Editor of THE LANCET

SIR,—In the leading article in your last issue it is pointed out that the incidence of lung tumours in certain inbred strains of mice is increased by subcutaneous injection of carcinogenic agents—e.g., dibenzanthracene. You ask, "But why is the carcinogenic action of these substances focused on one organ—in this case the lungs?" I suggest that an extra stimulus comes from the external environment.

Some of my results—of prolonged dusting experiments with mice—which are being published next month, indicate that there may be an extra stimulus in the lungs—namely, some irritant or irritants inhaled in atmospheric dust. The lung is thus subject to constant irritation in this way even in ordinary atmospheres, but usually the degree of irritation is below the threshold. The subcutaneous injection of dibenzanthracene increases the susceptibility in certain strains so that the minor degrees of irritation may suffice to start the tumour in the lung. I am inclined to think that many of the earlier animal experiments with dust were of too short a duration, so that a reasonable conclusion could not possibly be attained. Lung tumours are usually late in development in mice as well as in man, where the mean age at death is 55 years.

I am, Sir, yours faithfully,

London N W, May 29th J ARGYLL CAMPBELL.

TREATMENT OF DRUG-ADDICTION

To the Editor of THE LANCET

SIR—In your issue of May 22nd Dr Vivian describes the use of autoserotherapy for drug addiction. I first made a note of this method when I read of it in a League of Nations publication about two years ago. It appeared to me that its results depended purely and simply upon the injection of serum, and

I therefore decided to test the effects of autolæmo therapy—i.e., the re injection of whole blood removed from the patient. My cases have been too few for publication, but the results in two of them were very striking. In a case of morphine addiction the patient had twice discharged herself from the hospital to which she had been admitted for this condition. She consulted me to obtain supplies, but since treatment two years ago, she has been completely free from craving. In a case of severe alcoholism sent to me by the probation officer of a police court the patient appears to have been cured, there has been no relapse for over a year. I have found a dose of 4 c cm adequate, and the best interval between doses seems to be four days.

I am, Sir, yours faithfully,

Camden road, N W May 31st H SEARLE BAKER

NŒVOID AMENTIA

To the Editor of THE LANCET

SIR,—In Mr Ralph Bates's interesting case of nœvoid amentia published in your last issue a radiogram of the skull is said to show irregular areas of calcification in the frontal region compatible with calcification in a plexiform angioma. Unfortunately little can be learned from the reproduction of the radiogram (Fig 2 of Mr Bates's paper) as to whether the shadow due to the calcification has the "festooned" appearance seen in other typical cases (compare the illustrations in the *Proceedings of the Royal Society of Medicine*, 1928-29, 22, 431).

Are plexiform angiomata in the frontal lobe more likely to be associated with amentia than others? There was no amentia in Dr C P Symonds's case (*loc cit*, p 440) in which the meningeal nœvus was mainly of the left occipital lobe. One would have thought that those on the right side of the brain, as in Mr Bates's case, would be less likely to be associated with amentia than those on the left side, but then in Mr Bates's case it is the frontal lobe which is chiefly involved. According to K H Krabbe (*Arch Neurol Psychiat*, Chicago, 1934, 22, 737) the intra cranial calcification is generally limited to the occipital lobe, according to H Bergstrand (*Abstracts of the Second Internat Neurol Congress*, London, 1935, p 124) and H Olivecrona (quoted in *Lancet*, 1936, 2, 752) röntgenological evidence of calcification is obtained in only a minority of cases, and in abortive forms epilepsy is often the only symptom.

I am, Sir, yours faithfully,

London W May 29th F PARKES WEBER.

PERNICIOUS ANÆMIA IN AN INFANT

To the Editor of THE LANCET

SIR,—Dr Smallwood's letter, in your issue of May 29th, does not contain the all important news as to whether or not any of his cases of subacute hæmolytic anæmia had histamine refractory achlorhydria. The case of pernicious anæmia in an infant, recorded by Langmead and Doniach, showed this feature, which, when taken in conjunction with the other findings, caused the infant's syndrome to resemble pernicious anæmia in every particular. The fact that the pernicious anæmia syndrome is almost unknown in infancy cannot alter the fact that when it does occur, it just does. Urinary obstruction due to prostatic disease is a condition peculiar to old men, I have seen it in a young child.

Dr Smallwood rightly states that achlorhydria is common in sick infants but this is not true when histamine is used to stimulate secretion of gastric juice, it has been sufficiently rare in my series of

cases always to raise in my mind the lurking suspicion that the nurse with more zeal than discretion has injected the histamine into the wrong baby or used a blocked needle. He is also right in saying that I do not call the megalocytic anemia of colonic disease pernicious anemia, surely he should know that no alumnus of the Birmingham Children's Hospital could be guilty of such an aberration.

I am Sir yours faithfully

Harley-street W May 29th

J C HAWKLEY

INSULIN THERAPY IN MENTAL DISORDER

To the Editor of THE LANCET

SIR,—An Association of Insulin Therapists in Psychiatry has been formed with Dr G. W. B. James as president. The objects are to hold meetings to discuss all matters arising from insulin treatment, to catalogue and make available the international literature, and to discover by discussion and correspondence the most efficient foundations of prognosis and after care. The Association welcomes all workers in this method. I shall be able to answer any inquiries from those interested.

I am Sir yours faithfully

EDWARD LARKIN
Secretary Association of Insulin
Therapists in Psychiatry

West Ham Mental Hospital Goodmayes
Ilford Essex May 27th

TRACHOMA IN REFUGEE CHILDREN

To the Editor of THE LANCET

SIR,—As president of the International Organisation against Trachoma, Mr A. P. MacCallan is clearly in a position to make ex-cathedra statements as to the dangers of introducing this disease into England and to warn the Ministry of Health against so doing. It is unfortunate however that before a question was asked in the House of Lords about the matter with its inevitable repercussions and alarms Mr MacCallan should not either have got in touch with any one of those directly concerned with the medical examination of the children or have made some inquiries as to the incidence of trachoma in the Basque district. He also appears to have assumed a trifle uncharitably that because the gentlemen who examined the children before embarkation in Bilbao were without special knowledge of ophthalmology they were therefore also lacking in the elements of common sense. We did, in fact, make it our first duty on arrival in Bilbao to inquire from the public health authorities as to the incidence of trachoma in the Basque district and found that of recent years it has been extremely low. This was confirmed by a Spanish ophthalmic surgeon of many years' experience in Bilbao who accompanied the children to England. Mr MacCallan's statements as to the high incidence of trachoma in certain provinces of Spain, apparently based on the report of the Consilium Ophthalmicum (1929 13 113) apply to the districts of Murcia, Almería, Valencia and Castellón. The suggestion however that trachoma is practically universal is so palpably exaggerated that it is surely based on a misunderstanding of Prof. Soria's statistics. The figure 90 per cent which he gives refers not to the incidence of trachoma in the population at large but to the percentage of eye cases which are trachomatous. Actually the highest incidence of trachoma in any province is 2 per cent of the population. The same source shows that the incidence in these districts was from 25 to 55 times as high as in the neighbourhood of Bilbao so that Mr MacCallan's

whole quotation is likely to be misleading. It is hardly realised in this country how widely different from South and South East Spain are the circumstances both as regards climate and public health in the Basque district. As to the further examination of the children Dr Richard Taylor (medical officer in charge of the Eastleigh camp) is replying to Mr MacCallan's letter in the *British Medical Journal*. Briefly each child who leaves the camp will have received a minimum of three full medical examinations. An ophthalmic surgeon with considerable experience in the diagnosis of trachoma sees all eye cases. No evidence of trachoma has been found in any instance.

We need hardly add that all those concerned are fully aware of their responsibility and most anxious to coöperate in necessary measures to prevent the spread of any infection that may occur.

We are Sir yours faithfully

RICHARD W. B. ELLIS

AUDREY E. RUSSELL

London W May 31st.

GASTRIC ACIDITY AND CHRONIC ALCOHOLISM

To the Editor of THE LANCET

SIR,—Would it not be in the interest of future generations to drop the phrase test-meal even if for some years more patients must submit to the meaningless ritual of gruel or alcohol? What evidence is there that the mechanism of secretion in man differs from that in experimental animals? Gruel, if introduced into the resting stomach in the small hours of the night without awakening the subject leads to no acid secretion. Seven per cent alcohol under the same circumstances usually also gives a small response only. In other words the test-meal response is not a response at all but is partly the result of a basal secretion which is either continuous (pathological) or conditioned by breakfast time and partly the result of various other conditioned reflexes.

The secretion of 100 c.c.m. of gastric juice per hour is quite sufficient to give a very high curve in a rapidly emptying stomach but it is no evidence that the patient is capable of secreting the 300 or 400 c.c.m. per hour needed to deal with the buffering powers of a Christmas dinner. The possessor of a normal mucous membrane even if he gives the lowly normal curve can reduce a protein meal to a low pH in a far shorter time than the patient with chronic gastritis who may incidentally give a hyperchlorhydric curve.

Chronic alcoholism and chronic gastritis are almost synonymous but the patients referred to in your annotation (May 20th p. 1292) were not given a fair trial. They had probably lost the habit of secreting at breakfast time and through their habit of drinking without food had lost the conditioned response to alcohol which better brought up persons tend to possess.—I am Sir yours faithfully

Oxford May 30th

DEAN JENNINGS

BIPP TREATMENT OF ACUTE OSTEOMYELITIS

To the Editor of THE LANCET

SIR,—I should like to add my testimony to that of Mr J. H. Sant as to the great value of Bipp treatment in the prevention of necrosis after acute osteomyelitis.¹

Fifteen years ago a boy aged 6 was admitted to the East Suffolk Hospital with acute osteomyelitis of the left

¹ The case described here was reported in the *Clinical Journal* (1920 89 90).

leg of five days' duration. He was very ill with a temperature of 105° F and a pulse rate of 160. The leg was greatly swollen and inflamed and acutely tender. There was no effusion on the knee- and ankle joints. Thinking it possible that even when the periosteum was stripped from the shaft by pus and the medulla acutely infected, the actual structure of the dense bone might be still living and free from bacterial invasion, I decided to attempt complete sterilisation of the inner and outer walls of the shaft.

A tourniquet was applied above the knee. This is essential in order to keep the field of operation free from blood, and especially to avoid the danger of causing a general systemic infection by scrubbing the inflamed tissue during the operation. A long incision was made down the whole length of the diaphysis over the inner side of the tibia. The shaft was bare and bathed in pus, the periosteum being entirely stripped off. The pus was washed away and the surface of the bone and periosteum thoroughly cleansed by scrubbing with gauze, first with 1 in 20 carbolic lotion, then with spirit, and, finally, with ether. Sterile gauze was then packed between the bone and surrounding tissue, and the medullary canal laid open for its whole extent, the marrow which was infiltrated with pus was scraped away and the cavity scrubbed with carbolic lotion, spirit, and ether. The packing was then removed and a thick layer of gauze, moistened with carbolic lotion and soaked in Bipp (the excess of which was removed by squeezing), was laid between the bone and periosteum, and the medullary canal also packed with gauze soaked in Bipp. The usual dressing was then applied and the tourniquet removed.

On the next day the temperature and pulse were normal, the swelling had entirely subsided, and the leg was free from pain or tenderness. The gauze was removed on the third day. The wound healed quickly without suppuration except for a small sinus in the metaphysis at the head of the tibia which continued to discharge a little pus for several weeks. Finally a very small sequestrum came away at this spot and healing was complete. Unfortunately I did not realise at that time that the primary focus of infection in these cases is in the metaphysis. Had this focus been explored and sterilised, there would no doubt have been no delay in complete recovery.

I saw the boy five years later and took a photograph and radiogram of the leg. Both legs were of exactly the same size and shape, and the radiogram showed a perfectly normal shaft, except that the bone was solid throughout, the medullary canal being filled up.

I am, Sir, yours faithfully,

Worthing May 31st

HERBERT H. BROWN

OBSTETRICS IN GENERAL PRACTICE

To the Editor of THE LANCET

SIR,—The general opinion certainly is that the practice of obstetrics, like the practice of surgery, should be in the hands of those who have specialised in the subject. It is also desirable that in every area there should be a medical man readily available to attend to these cases, since many require attention at a very short notice. Our consulting surgeons usually reside in the larger towns and cities, this is quite satisfactory in the case of surgery, but would not be as satisfactory in the case of obstetrics. Further, many general practitioners are excellent obstetricians, keen on the work and (what is even more important) have the complete confidence of their patients. Certain of these practitioners might be given the care of the antenatal and confinement work in their area, but it would only be fair that they should produce some evidence to the authorities of their proficiency in the art of midwifery. The Diploma of the British College of Obstetricians and Gynaecologists and the Mastery of Midwifery of the Society of Apothecaries would either of them furnish good evidence of the special knowledge, but unfortunately

both these examining bodies require the candidates to have held resident appointments in hospital for at least six months before their examination. Now many quite able practitioners cannot afford to leave their practices for this length of time. Would it not be possible for some of our examining bodies to arrange an examination for a diploma in obstetrics, &c., without a compulsory resident appointment? If such an examination could be arranged in the very near future, practitioners desiring to specialise in the work would have reasonable opportunity to obtain that diploma before it is decided by the Ministry of Health to place the practice of obstetrics in the hands of experts.

I am, Sir, yours faithfully,

May 29th

SOALPEL.

METHODS OF DESTROYING BED-BUGS

To the Editor of THE LANCET

SIR,—Research on the eradication of bed bugs is being mainly (and rightly) directed towards discovering simple methods which are 100 per cent efficient. The "naphtha distillate" method described by Ashmore and McKenny Hughes (*Lancet*, Feb 27th, 1937, p 530) shows a real advance in technique, but as J M Holborn suggests in your issue of May 1st, there is still need for contact insecticides which can be used by the inhabitants of bug infested houses, insecticides which are cheap and easy to apply and whose use is not too obvious to the neighbours.

Experiments show that dilute methylated spirit kills bed bugs. A mixture of 30 parts of spirit with 70 parts of water has a low surface tension, so that it penetrates readily into the cracks which the insects inhabit. Practically every adult and nymph which the liquid touches dies, those in the cracks where the fluid remains for some time before it evaporates are all killed. Small nymphs are particularly susceptible, in fact this stage often dies if wetted with ordinary water. Eggs are more resistant than other stages, but eggs in the cracks which remain wet for an hour seldom survive.

This insecticide is very cheap, for if duty free spirit can be used the mixture costs about sixpence a gallon. It is not inflammable (50 per cent spirit kills eggs more readily, but is inflammable), it gives off no noxious fumes, and, most important of all, it does not damage furniture or bedding.

This method will not kill every bug in a house, but if the liquid is sprayed into the crevices few bugs will survive and the house will be made much more comfortable for the inhabitants. A second application after any eggs which escaped have hatched should leave almost none of the parasites alive. When fumigation and other methods have been perfected, this sort of treatment will not be necessary, but, until then, use should be made of any practicable means of alleviation.

I am, Sir, yours faithfully,

KENNETH MELLANBY

The Sorby Research Laboratory the University
Sheffield May 27th

KING EDWARD'S HOSPITAL FUND FOR LONDON—A second series of coronation tours of places of interest in London is being held in aid of the Fund during June and July. Visits will be paid to the Tower of London, the Houses of Parliament, the Royal Naval College and the National Maritime Museum at Greenwich, Somerset House, Lloyds and Tilbury Docks. Further particulars may be had from the secretary of the Fund, 10, Old Jewry, London, E.C.2

OBITUARY

ALFRED ADLER, M.D Vienna

Prof Alfred Adler founder of the school of individual psychology arrived in Europe from America on April 26th with a very full programme planned for him. During the first month of his visit he gave nearly 50 lectures in Holland Belgium and France before coming to this country where his first public engagement was the delivery of a course of five lectures on psycho pathology at Aberdeen one on each day between May 24th and 28th. His last lecture on the 27th was on The Structure of Neurosis and was described by a member of a crowded and enthusiastic audience as one of the best Adler had ever been heard to give. Possibly the strain of his full European tour had overtaken his energies but he declared to a friend that he had found the work easy and was apparently in excellent spirits delighted with his welcome in Scotland, almost to the moment of his sudden death from heart failure on May 28th.

Alfred Adler was born in 1870 the second son of Leopold Adler and was educated at the Latin school and the University of Vienna, where he studied psychology and philosophy as well as medicine. He qualified in 1895 and worked in the Vienna General Hospital and Polyclinic from 1895 to 1897 when he set up as a general practitioner. He remained in Vienna for 30 years as physician and medical psychologist and during this long period passed through many phases of intellectual and emotional experience to become eventually the founder and leader of a school of thought which has taken hold in many countries.

Adler played a part in the recent history of psychotherapy that is not easy to assess. He was a practicing physician in Vienna when he became one of the small band of supporters whom Freud drew to himself after the period of isolation that followed his first enunciation of psychoanalytical principles. Adler however does not seem ever to have concerned himself with the technique of psychoanalysis but rather to have formulated general principles which he was able to apply to individual cases the chief being those of organ inferiority which led to the localisation of symptoms in the anatomically inferior organ and of the will to power which determined neurotic behaviour with its aim of influencing the environment and reaching a satisfaction not otherwise attainable the theory of the will to power giving to our language the much abused phrase inferiority complex. These formulations could not be reconciled with psychoanalytical principles and after vigorous controversy Adler was invited in 1911 to leave the Viennese Psychoanalytical Society. Since then he showed himself to be a vigorous propagandist and won support and popularity both in his own country and in England favoured by the absence from his teaching of any special emphasis upon sexual

causes of the psychoneuroses and also by the avoiding of the difficult conceptions associated with the theory of the unconscious. It was characteristic of Adler and his principles that he could expound them to an audience in a single lecture and convey the feeling that in them was a complete explanation of the pathological vagaries of human behaviour. His clinical methods were akin to the explanation and persuasion of Dejerme and his personal confidence and enthusiasm communicated itself to his patients as well as to his adherents. In this country he obtained more support from physicians and general practitioners than from professed psychotherapists, who admitted the usefulness of his approach but saw in it an over-simplification that might lead to the neglect of important mental processes outside his scheme of causes.

It was in 1912 the year after he had been asked to resign from the Viennese Psychoanalytical Society that Adler began to be specially interested in the prevention of neurosis and delinquency in childhood, an important branch of his interests which has probably received too little attention in this country. He began educating teachers to this end and gradually organised with collaborators child guidance centres in 30 schools in Vienna. It is reported by his admirers that these led to a remarkable decrease of delinquency in Vienna, until a change of educational policy resulted in their closure. His thesis was that it is the aim chosen in early childhood that decides the character of the individual. The trained individual psychologist seeks to reveal to a child what his aim really is and to enable him to change what is often a useless and egocentric attitude—likely to lead

towards a neurotic or delinquent future—to a social and cooperative attitude equally likely to lead towards a normal and successful life.

There has hardly been opportunity in this country to judge of the success of this teaching on a large scale but some who have watched Adler demonstrating his method with a child patient—such a demonstration had been arranged for the day of his death—are deeply impressed with its success.

During the last ten years America has been the seat of Adler's activities. He was appointed lecturer in Columbia University New York City in 1927 and though he went back to Vienna for a spell as clinical director of the Marienhiller Ambulatorium he returned to the United States as visiting professor at Long Island College in 1932. He wrote freely his most important works which have been translated (but not always very well) being on the study of organ inferiority the neurotic constitution and the practice and theory of individual psychology.

One of his three daughters Dr Alexandra Adler who is a research reader at Harvard, is now on her way to this country with the intention of carrying through her father's programme.



ALFRED ADLER

(Photograph by Universal Press)

ARTHUR DOUGLAS HEATH, M D , F R C P Lond

Dr Douglas Heath, who died last month at Edgbaston, was consulting physician to the skin department of the Birmingham General Hospital and dermatologist to King Edward's Schools. Born in Exeter, the son of James Pulling Heath of Southernhay, he retained throughout life his interest in the west country, and just before his death had been present at the Devonian dinner. He was educated at Exeter Grammar School and University College, London, qualifying M B Lond. with honours in 1892 and taking the M D in the following year. After holding house appointments at University College Hospital, he settled in Birmingham, first in general practice in Edgbaston, then as assistant physician to the General Hospital, and as his interest in dermatology became more pronounced taking charge of the skin department and of the venereal clinic. In 1926 he presided over the British Association of Dermatology and Syphilology, and more recently was president of the Midland Medical Society.

"With the demise of Douglas Heath," writes a friend and colleague, "the Midlands have lost their acknowledged leader in dermatology. For a quarter of a century he taught at the General Hospital and in the University of Birmingham and many hundreds of students were first initiated into this rather puzzling speciality in Heath's inimitable manner. No one could forget his description, before a class of students, of such a condition as psoriasis or dermatitis herpetiformis, in a few words the salient points were brought out in a way very different from a text book description. The Birmingham medical school has lost a great teacher and a delightful personality."

Dr Heath married Annie, daughter of the Rev Henry Taylor of Wells, Somerset, and he leaves a widow with one son and one daughter.

EDWARD CARMICHAEL, M D , F R C P Edin

Dr Carmichael, who died on May 28th, at Bournemouth, where he was living in retirement, graduated at Edinburgh in 1884 and took the gold medal at the M D two years later when he was Syme surgical fellow. After being resident surgeon at the Edinburgh Royal Infirmary and tutor in clinical surgery at the University, he went into private practice in the city and became visiting medical officer to the City Poor House at Craglockhart. His successor writes of him: "With the passing of Edward Carmichael Edinburgh has lost one of her well known and greatly beloved physicians. For long years he faithfully guided and ministered to the members of a large general practice. He was a man wholly wrapped up in his work, ever ready for service both in bodily ailments and family distress. Nevertheless he found time to keep himself conversant with the advance of medicine, and those who worked with him will ever be grateful for his help and the knowledge gained through his great experience. Although he retired some years ago his old patients still talk and think of him as 'Edward the Beloved'. He was the ideal family doctor and friend." His son, Dr E. Arnold Carmichael, is director of the neurological research unit at the National Hospital, Queen-square.

EMILY FRANCES CAMPBELL, L R C P Edin

WE regret to announce the death on May 20th of Lady Campbell, widow of Sir John Campbell, the

distinguished Belfast surgeon. Lady Campbell was daughter of the Rev William Chestnut, of Traler, Co Kerry, and received her early education at the Victoria College, Belfast. She was first married to Dr Fitzsimons, a medical missionary, with whom she worked abroad for some years. After his death she decided to return to Belfast and study medicine. She took her degrees at Edinburgh and afterwards engaged in private practice in Belfast, on the Antrim road until her marriage to Sir John Campbell some three years later. During his lifetime Lady Campbell identified herself closely with her husband's work, acting as his anaesthetist and taking a deep interest in the welfare of the Samaritan and other Belfast hospitals. Of attractive personality she was everywhere respected for her kindly and gentle disposition. She is survived by two sons, the elder, Robert, a graduate in agriculture of Cambridge University, the younger, William Stewart, a recent graduate in medicine of Queen's University, and a demonstrator in the Belfast Medical School.

Dr GEORGE HAMILTON WINCH, who has died at Penarth, at the age of 58 years, was for sixteen years specialist officer in the treatment of venereal diseases under the Glamorgan County Council. He qualified M B Edin in 1904, taking honours in anatomy and surgery, was then house physician and pathologist at the City of London Hospital and later assistant medical officer of Oxford County Asylum. During the late war he was bacteriologist to the Northern Command with the rank of Captain R.A.M.C. He is survived by his widow and two daughters.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED
MAY 22ND, 1937

Notifications—The following cases of infectious disease were notified during the week. Small pox, 0, scarlet fever, 1525, diphtheria, 850, enteric fever, 20, pneumonia (primary or influenzal) 787, puerperal fever, 32, puerperal pyrexia, 114, cerebrospinal fever, 23, acute poliomyelitis, 3, acute polio encephalitis, 2, encephalitis lethargica, 5, dysentery, 14, ophthalmia neonatorum, 116. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on May 28th was 2948 which included: Scarlet fever 748, diphtheria, 841, measles 68, whooping-cough 494, puerperal fever 22 mothers (plus 15 babies), encephalitis lethargica 282, poliomyelitis 1. At St Margaret's Hospital there were 22 babies (plus 16 mothers) with ophthalmia neonatorum.

Deaths—In 123 great towns, including London, there was no death from small pox. 1 (1) from enteric fever, 10 (1) from measles, 1 (0) from scarlet fever, 14 (4) from whooping-cough, 20 (5) from diphtheria, 47 (0) from diarrhoea and enteritis under two years, and 34 (1) from influenza. The figures in parentheses are those for London itself.

Hull reported 3 deaths from measles. Middlesbrough and Birmingham each 2. There were 7 fatal cases of diarrhoea at Liverpool 4 at Birmingham 3 at Nottingham.

The number of stillbirths notified during the week was 275 (corresponding to a rate of 40 per 1000 total births), including 43 in London.

NEW HEALTH CENTRE AT ISLEWORTH—Sir George Newnam has opened a health centre at Busch-corner Isleworth. There is a large central hall for lectures and demonstrations capable of division into separate waiting-rooms and a dental wing, arranged as an independent unit. The building cost £7610.

PARLIAMENTARY INTELLIGENCE

FACTORIES BILL COMMITTEE STAGE CONCLUDED

THE Factories Bill was further considered by a standing committee of the House of Commons on May 25th and 27th.

INTERPRETATION OF FACTORY

On Clause 144 Mr. SHORR moved an amendment to provide that premises where switching operations were performed should be brought within the Bill. In 1935 there were 47 accidents in stations above 600 volts and 92 accidents in stations below 600 volts.—Mr. GEOFFREY LLOYD said the Electricity Commissioners had a statutory responsibility for securing the safety of the public and they were advised that that included their employees. But the Home Office would take up the matter again with the commissioners.—On this understanding the amendment was withdrawn.

DEFINITION OF YOUNG PERSON

On Clause 145 Sir J. SIMON, Home Secretary, secured amendments to make the definition of a young person read: A person who has attained the age of 14 and has not attained the age of 18 but does not include any person whose parent is required under or by virtue of the Education Acts 1921 to 1937 to cause him (unless there is some reasonable excuse) to attend school or to attend an alternative course within the meaning of the Education Act 1936. No one ever intended that young persons who were required to be kept at school should be available for factory work, and it was better to say so in the Bill in proper terms.

On Clause 148 Mr. T. M. COOPER, Lord Advocate, secured a similar amendment for Scotland and another making it unnecessary to hold an inquiry under the Fatal Accidents Inquiry (Scotland) Act of 1895 in any case where the Home Secretary had already held an inquiry.

WORKING HOURS FOR YOUNG PERSONS EMPLOYED IN FACTORIES

Sir J. SIMON moved the following new clause:—

(1) Subject to the provisions of this section as from the expiration of a period of two years after the commencement of this Act, the foregoing provision of this Part of this Act limiting the hours worked in any week exclusive of intervals allowed for meals and rest shall have effect in the case of young persons who have not attained the age of sixteen as if for the reference to forty-eight hours there were substituted a reference to forty-four hours.

(2) If representations are made to the Secretary of State with respect to any class or description of factory—

(a) that the industry carried on in that class or description of factory is, either generally or as respects a particular process, so dependent on the employment of such young persons and so organised that the carrying on of the industry would be seriously prejudiced unless the number of hours worked in a week by such young persons employed in that industry or in that process were permitted to exceed forty-four;

(b) that such increased hours would not be likely to be injurious to the health of the young persons; and

(c) that the work in which the young persons would be employed in that industry or process is particularly suitable for young persons and that their employment would familiarise them with and help to train them for employment in processes in which older persons are employed in the industry and be likely to lead to their permanent employment in the industry.

The Secretary of State may direct an inquiry to be held and, as a result of the inquiry, he is satisfied with respect to all the matters aforesaid, he may make regulations increasing the total hours exclusive of intervals allowed for meals and rest that may be worked by such young persons in any week in that class or description of factory

or as the case may be in a particular process carried on therein to such figure not exceeding forty-eight as may be specified in the regulations.

The committee were he thought all of one mind in wanting to devise some plan which would not leave 48 hours for young persons under 16 as the permanent provision of the Bill. This new clause had been brought forward to fulfil as far as possible that object. But if they were to make a reduction it could not be done merely by a stroke of the pen. There must be a suitable interval provided and the new clause provided that the interval should be a period of two years from the commencement of the Act. The new clause was the result of very careful inquiry in which the Home Office had had the help of trade-union leaders and employers' representatives.

Viscountess ASTOR said she was astonished that the Government at this time of day proposed to allow children under 16 to work 44 hours a week in factories.—Sir E. GRAHAM LITTLE said he was certain that if the committee pressed for a 40 hour limit it would carry public opinion with it.—Mr. LLOYD replied that in this matter they had to secure a practical compromise between what should be done for the children and what were the needs of industry. The absence of juveniles might very seriously affect the output and it might be the wages of the adult workers.—Mr. RHYE DAVIES secured an amendment to make the interval after the passing of the Act before the clause came into operation one instead of two years, but his further amendment to reduce the number of hours work per week for juveniles in factories from 44 to 40 was negatived by 20 votes to 10.

Mr. LLOYD moved that a young person who works in a factory whether for wages or not in collecting, carrying or delivering goods, carrying messages, or running errands shall be deemed to be employed in the factory for the purposes of this Act; provided that the provisions of Part VI shall not apply except as expressly provided, to any such young person who is employed mainly outside the factory. This was agreed to.

WORKING HOURS FOR YOUNG PERSONS EMPLOYED OUTSIDE FACTORIES

Mr. LLOYD moved a new clause defining the conditions of employment of young persons employed in the business of a factory wholly or mainly outside the factory:

(a) The total hours worked exclusive of intervals allowed for meals and rest shall subject to the provisions hereinafter contained relating to overtime not exceed forty-eight in any week.

(b) The young person shall not be employed continuously for a spell of more than five hours without an interval of at least half an hour for a meal or rest and where the hours of employment include the hours from half past eleven in the morning to half past two in the afternoon an interval of not less than three-quarters of an hour shall be allowed between these hours for dinner.

(c) On at least one week-day in each week the young person shall not be employed after 1.30 p.m.

(d) The young person if he has attained the age of sixteen may on occasions of seasonal or other special pressure or in cases of emergency work overtime that is to say in excess of the permitted weekly hours but his hours of overtime work shall not exceed six in any week or fifty in any calendar year and where any employer has employed overtime any young persons to whom this section applies in twelve weeks (whether consecutive or not) in any calendar year neither he nor any person succeeding to his business shall employ young persons to whom this section applies overtime during the remainder of that year.

(e) The young person shall in every period of twenty-four hours between mid-day on one day and mid-day on the next day be allowed an interval of at least eleven

consecutive hours which shall include the hours from 10 o'clock in the evening until 6 o'clock in the morning

Sir E GRAHAM-LITTLE protested against the five hours' continuous spell provided in Sub-section (b) and the 13 hours in Sub-section (c) which he said he considered to be too long—Viscountess ASTOR concurred

WORK BEFORE AND AFTER CONFINEMENT

Mr GRAHAM WHITE moved the following new clause—

Any woman or young person employed in a factory shall be entitled, on the production of a medical certificate stating that her confinement will probably take place within six weeks, to leave her work, and she shall not be permitted to work during the six weeks following her confinement

Any woman or young person who shall have left her work under the provisions of this section shall be entitled to be re-employed at the end of the period of rest

He would like, he said, this country to come into line with the legislation and practice of foreign countries

Sir E GRAHAM-LITTLE said that he hoped the Committee would not accept the new clause. Any hard and fast rules for the treatment of confinements before and after delivery were entirely unscientific. Every case should be judged on its merits. The whole question was dealt with in a more sensible way in the munition factories during the late war when graded work was found for women during the pregnancy period.

Viscountess ASTOR said the new clause, if adopted, would do a great disservice to women. From the point of view of the State it would be very wise on the part of the Government to say that a woman could apply for exemption a month, say, before the child's birth as well as a month afterwards, provided she had full maternity benefit. Sooner or later we must do something to protect women who went into industry so that they should have full time for child bearing.

Mr RHYS DAVIES agreed with Lady Astor. Maternity benefit had not had the effect people imagined it would. The women complained that most of the money did not go to them to buy food and clothing but to the people in the professions who worked on them. He was satisfied that women in industry who bore children ought to receive very much more consideration from the community than they did.

Mr R S HUDSON, Parliamentary Secretary to the Ministry of Health, asked the Committee not to accept the clause for several reasons. It was a clause appropriate not to a Factories Bill but to a Public Health Bill. Secondly, it attempted to put into force part of a provision included in the draft Washington Convention. Actually this was made dependent on the provision that when a woman left work in these circumstances she was to receive full and adequate maintenance. He agreed with Lady Astor that without the provisions of the Washington Convention this clause would do much more harm than good. At present any woman who could get a doctor's certificate to say that she was incapable of work was entitled to sign off and receive benefit for four weeks before the confinement, and no employer was allowed knowingly to employ a woman within a certain period after the date of confinement.

The clause was negatived without a division.

PROVISION FOR NURSING MOTHERS

Mr GRAHAM WHITE moved another new clause—

A woman or young person employed in a factory who is nursing her child shall be allowed half an hour twice a day for this purpose, and time so allowed shall be included in the calculation of the total hours worked.

Mr HUDSON said he was afraid that he would again have to ask the Committee not to accept this clause,

because it was not in any way complete. In order to be effective it would also have to include provisions for insisting that factories should provide nurseries, or rooms where the mother could nurse her children, and some arrangement for bringing the children from the home to the factory. They were informed by their scientific advisers that in these times of a much shorter working day provisions of this nature were unnecessary, that it was sufficient in normal conditions for a woman to nurse her baby before she left for the factory and immediately after she got home, and that provision for one artificial meal for a child in the middle of the working period was a much better arrangement than either expecting the woman to go back home to nurse the child or arranging for the child to be brought to the factory.

The clause was negatived without a division.

YOUNG PERSONS AND DANGEROUS MACHINES

Colonel SANDEMAN ALLEN moved a new clause dealing with the training and supervision of young persons working at dangerous machines. He said that he was not satisfied that in the case of young persons there was at present sufficient supervision or that the powers of the Home Secretary were altogether adequate. The figures for accidents to young persons had increased in the most alarming way—Mr LLOYD said that the Government were prepared to accept the clause.

The Committee stage being concluded, the Bill, as amended, was ordered to be reported to the House.

NOTES ON CURRENT TOPICS

Eradication of Animal Diseases

In the House of Commons on May 27th Mr W S MORRISON, Minister of Agriculture, made a statement on agricultural policy, in the course of which he said that the Government proposed to initiate a large scale and more comprehensive campaign for the eradication of animal diseases in Great Britain. Their object was to improve the health of livestock and increase agricultural productivity by seeking to eliminate what was perhaps the worst of all forms of wastage and economic loss in agriculture. In the first instance, efforts would mainly be directed to the eradication of diseases among cattle. The scheme would involve an additional charge on the Exchequer of about £800,000 per annum for the first four years. It would, however, involve centralisation of public veterinary services and as against the increased cost to the Exchequer, the expenditure by local authorities would be reduced by about £170,000. Parliamentary authority would be required for these proposals. The Government were anxious, however, to lose no time in developing the existing schemes of control of disease and accordingly he was arranging at once to amend the Attested Herds Scheme under the Milk Act, 1934, by providing additional assistance in England and Wales, as had already been done in Scotland, to owners of dairy stock who were desirous of eradicating tuberculosis from their herds. This revised scheme would become operative on June 1st next. In the opinion of the Government the proposals which he had outlined by increasing the productivity of our agriculture, not only would enable it better to meet the situation in the event of war, but would be a substantial aid towards raising efficiency, lowering costs and establishing the industry on a sounder economic foundation in time of peace. The necessary legislation to give effect to these proposals would be introduced at the earliest possible moment.

Trade Marks and Proprietary Preparations

In the House of Commons on May 27th Dr BURGESS (then Parliamentary Secretary to the Board of Trade) moved the second reading of the Trade Marks (Amendment) Bill, which has already passed through the House of Lords. He said that the Bill generally speaking, implemented the report of the Departmental Committee which had reviewed the law

relating to trade marks. Clause 4, which was the main clause of the Bill dealt with words used as the name or description of an article and would be of assistance to owners of well known trade marks.

Mr A. V. ALEXANDER, in moving the rejection of the Bill, said that under the measure if it was not amended trade mark infringement would occur if any one made any reference to other goods which they were selling under a mark. For example it would be impossible to sell a medicine as similar to "although in effect the two productions might be identically made of common substance in which there was no special virtue. The only virtue was in the use of the adopted trade mark which might perhaps lead to an exploitation of the public in price which was absolutely indefensible.

Mr BARNES said that in many cases owners of proprietary preparations were taking advantage of the present legal protection to practise frauds on the public in the claims they made regarding the curative powers of their preparations and the prices they charged for them. Safeguards which were very essential for the protection of the public at large, ought to be inserted in the Bill and obligations imposed on the owners of proprietary preparations which would prevent them from exploiting the public. There ought not to be, as a result of the Bill further restrictions in the realm of proprietary goods.

Mr BROAD expressed the fear that some of the provisions of the Bill would have the effect of enabling people to build up a little preserve or monopoly. He had a case in mind. Some chemical firms were selling a new and very valuable kind of disinfectant, for use as a gargle and so on. It was called 'Thymol' and to make it ready for use it was compounded in some way with glycerine. Prescriptions were given by doctors to be taken to the chemist for this glycerine of thymol. It became more generally used, and then a very big American firm put up the stuff as a standard article and called it glyco-thymoline. Other firms began to do the same thing calling it glycerinated thymol or glycerine of thymol. Since glycerine of thymol or glycerinated thymol sounded very like glyco-thymoline, it might be said that one could never sell glycerine in combination with thymol because of the trade mark glyco-thymoline. He was afraid of the creation of monopolies in that way.

Dr BURGIN, replying to the debate said defensive trade marks were never to be invented. There would therefore, never be any prohibition on members of the public using simple language and descriptions of articles by their proper names. If Clause 15 could really be thought to extend to the verbal boost by a salesman that a certain thing was in his opinion as good as or equivalent to aspirin then that was nonsense. If it was necessary to delete or insert words to prevent that impression gaining ground, it could be done in committee. There was a whole series of things in regard to which a manufacturer ought to be able to attach conditions such as the packing stoppering &c of his goods. The idea was that the manufacturer when an article left his factory in a particular state should if the customer required it in a particular state be entitled to say that it should reach the customer in that state.

The motion for the rejection was withdrawn and the Bill was read a second time.

In the House of Lords on May 25th the Widows Orphans and Old Age Contributory Pensions (Voluntary Contributors) Bill was read a second time. The Children and Young Persons (Scotland) Bill was read the third time and passed.

In the House of Commons on May 27th, the Public Health (Drainage of Trade Premises) Bill which has already passed through the House of Lords, was read a second time.

In the House of Commons on May 28th the Marriage Bill was read the third time by 190 votes to 87.

QUESTION TIME

WEDNESDAY MAY 26TH

Approved Societies

Mr PARKER asked the Minister of Health whether in view of the differing practices of various approved societies in the administration of the National Health Insurance Act he was prepared to secure the introduction of a uniform system under which the rights of insured persons to benefit were more clearly defined.—Mr HUDSON, Parliamentary Secretary to the Ministry of Health replied: My right hon. friend has no reason to think that under the system of administration of national health insurance through approved societies insured persons are not aware of their rights to the benefits provided by the Act and as every insured person has a right of appeal if he is dissatisfied with the decision of his society on a claim for benefit my right hon. friend does not consider that any such fundamental change as is suggested by the hon. Member is either necessary or desirable.

Mr RHYE DAVIES asked the Minister of Health in connexion with the freedom of choice of approved society the approximate total membership of the few approved societies which had agreed not to accept applications for transfer from members of certain other societies the group of societies to which they mainly belonged and the approximate percentage such membership bore to the total membership of approved societies.—Sir KINGSLEY WOOD replied: Approved societies entering into arrangements of the kind referred to by the hon. Member are not required to notify such arrangements to my department and do not in fact do so. I am not therefore in possession of the information asked for in the question.

THURSDAY MAY 27TH

Survey of Working-class Budgets

Mr TOM SWINN asked the Minister of Labour whether the inquiry into the question of the revision of the cost of living index figure was yet completed and if so what action he proposed to take.—Mr KENNETH BROWN replied: The methods to be adopted in obtaining the data required for a revision of the basis of the cost-of-living index figures have for some time been under consideration by my department in consultation with an advisory committee appointed for this purpose. The committee have recommended that budgets should be collected giving details of the expenditure of a representative sample of some thousands of working-class families in each of four weeks at quarterly intervals beginning in the autumn of this year and the necessary preparations for the collection of these budgets are now being made.

Tuberculosis in Wales

Mr JAMES GRIFFITHS asked the Minister of Health having regard to the high mortality rate from tuberculosis in Wales, what steps he proposed to take to deal with the problem. In particular what progress was being made with proposals for rural housing and whether these plans could be expedited in view of the gravity of the problem.—Sir KINGSLEY WOOD replied: Although the rate of mortality from tuberculosis in Wales is higher than in England and Wales as a whole I may remind the hon. Member that there has been a substantial decline in the rate in Wales as well as in the rest of the country this decline amounting to 38 per cent on the figures for 1935 as compared with 1910. In Wales the arrangements for the treatment of tuberculosis are made by the Welsh National Memorial Association on behalf of the Welsh County and County Borough Councils and a survey of the services provided by the Association is at present being undertaken by one of the Medical Officers of the Welsh Board of Health. I am awaiting the results of this survey before considering what further measures are required. As regards the second part of the question, the position is that 4300 houses are included in the slum clearance programme of the Welsh rural authorities and that 1339 replacement houses have been approved of which over 700 have been completed. A further 388 houses have been approved for the abatement of overcrowding and for general needs. My department is continually

watching the progress of the clearance programme with a view to expediting it where possible

Committee on Corporal Punishment

Mr MUFF asked the Home Secretary whether he was now in a position to announce the constitution of the committee on corporal punishment.—Sir J SIMON replied: At the suggestion of my right hon. friend, the Secretary of State for Scotland, it has been decided that the committee shall inquire not only into the English but also into the Scottish law and practice. The committee's terms of reference will be "To consider the question of corporal punishment in the penal systems of England and Wales and of Scotland, to review the law and practice relating to the use of this method of punishment by Juvenile Courts, by other courts and as a penalty for certain offences committed by prisoners, and to report what changes are necessary or desirable." As already announced, the Hon. Edward Cadogan has consented to act as chairman of the committee. The following ladies and gentlemen have now accepted invitations to serve on it: The Lady Amptill, C.I., G.B.E., Mrs A. E. Astley, Prof J. E. Brierly, O.B.E., J.P., Mr E. Ford Duncannon, D.S.C. M.A., J.P., Dr Robert Hutchison, Sir William McKechnie, K.B.E., C.B., Mr H. R. Tutt, and Mr Cecil Whiteley, K.C. My right hon. friend and I contemplate adding one other woman member, whose name will be announced as soon as possible.

Duke-Fingard Treatment of Respiratory Disease

Mr ROWSON asked the Minister of Health if he would set up a committee of inquiry, consisting of an equal number of medical men and laymen, to inquire into the efficacy and genuineness of the Duke-Fingard inhalation treatment for diseases of the respiratory organs, such as chronic catarrh, bronchitis, bronchiectasis, asthma, and tuberculosis, and if he would take steps to have this treatment made available for panel patients under the Health Insurance Acts who were suffering from chest complaints.—Sir KINGSLEY WOOD replied: No, Sir. I am not aware of any sufficient reason for instituting a special inquiry into this treatment. As regards the second part of the question, an insurance practitioner is free to give such treatment as in his judgment is appropriate for his patients.

Watered Milk

Mr DAVID ADAMS asked the Minister of Health whether he had now decided to take further steps to protect the public against watered milk, in view of the failures in recent prosecutions in cases of proved watering to obtain convictions before the magistrates.—Sir KINGSLEY WOOD replied: I have considered this matter again in the light of the recent prosecutions to which the hon. Member drew my attention. I understand that there was conflicting evidence in these cases, and that the magistrates in their discretion decided not to convict. In these circumstances, I do not as at present advised propose to introduce any fresh legislation on this subject.

Admission of Foreign Doctors and Dentists

Mr ROSTON DUCKWORTH asked the Home Secretary what was the present policy of his department with regard to the admission into this country of foreign doctors, dentists, research workers, and students, whether he could give the aggregate number permitted to settle here in the last two years, and what representations he had received from professional bodies in this country on the subject of this form of competition.—Mr GEOFFREY LLOYD, Under Secretary, Home Office, replied: The policy is to restrict closely the admission of foreign doctors and dentists who wish to set up in practice in this country after being admitted to the British Medical and Dentists Registers. Since March, 1935, the rule has been not to permit foreigners to engage in medical practice in the United Kingdom save in the most exceptional circumstances: the same rule has been applied in the case of foreign dentists since February, 1936. No general figures of the numbers to whom permission to practice has been granted are available. The question of the admission of refugee doctors and dentists from Germany has been the

subject of representations from and discussion with the various professional bodies concerned and separate figures have been kept of the numbers of refugee doctors and dentists to whom permission to set up in practice has been granted. They are 183 doctors and 78 dentists, of whom the large majority, in the case of the doctors, had either been granted permission to practise or had commenced their studies for a British degree before March, 1935, and in the case of the dentists had been admitted to the Dentists Register before February, 1936. As regards research workers and students whose work does not involve employment in the service of a person or firm in this country, no obstacles are placed in the way of their admission provided their maintenance here is assured, but they are expected to leave on the completion of their research or study. If employment is involved they are not admitted unless in possession of a permit issued by the Minister of Labour to their prospective employer in accordance with Article 1 (3) (b) of the Aliens Order, 1920.

MONDAY, MAY 31ST

Spanish Refugee Children and Public Assistance

Mr MESSER asked the Minister of Health if he was prepared to sanction public assistance committees providing accommodation for Spanish refugee children in homes or institutions at public expense.—Mr BERNAYS, Parliamentary Secretary to the Ministry of Health, replied: As financial responsibility for the Spanish refugee children has been undertaken by a number of voluntary bodies, my right hon. friend is not prepared to sanction expenditure on their maintenance by local authorities from public funds.

Ventilation of Telephone Kiosks

Sir MURRAY SUETER asked the Postmaster General whether any recent experiments had been conducted in connexion with ventilating public telephone kiosks in constant use, and whether some simple ventilation contrivance could be devised and, if satisfactory adopted, in the interests of public comfort and health, in positions where a 100 per cent noise proof telephone kiosk was not necessary.—Major TRYON replied: If the question refers to kiosks in the open, of which practically all are necessarily on or near the highway, my information is that the noise problem is far more important than that of ventilation. If, however, the question refers to cabinets indoors, I can assure my hon. and gallant friend that the question of improvement in ventilation is being actively pursued.

Compensation for Silicosis

Mr JAMES GRIFFITHS asked the Home Secretary if he was aware that the South Wales Coalowners Indemnity Society were refusing to pay compensation to men certified by the medical board to be disabled by silicosis, that the reason given for this refusal was that the society proposed to institute proceedings for the purpose of seeking a declaration that the silicosis orders issued by him were ultra vires, and that meantime these men were compelled to seek public assistance, and what action he proposed to take in the matter.—Sir SAMUEL HOAR replied: I have no information to the effect suggested in the question. I should be prepared to consider any fuller particulars which the hon. Member may send me, but I have, of course, no power to interfere with any legal proceedings.

Mr GRIFFITHS asked if Sir Samuel Hoar did not consider it deplorable that employers should try to take advantage of some possible technical flaw to deprive men suffering from this disease of compensation, and if he would give an assurance, if the courts held that this order was ultra vires, that these men would not be penalised but that the Government would bring in a new order to give them the compensation to which they were entitled?

Sir SAMUEL HOAR said he agreed that this was a matter of great importance, but he would rather not express an opinion until he had further facts.

ROYAL SOCIETY OF ARTS.—The Albert medal of this society for 1937 has been awarded to Lord Nuffield for services to industry, transport, and medical science.

PUBLIC HEALTH

The Bournemouth Outbreak of Enteric Fever

THE official report on the outbreak of enteric fever in Bournemouth Poole and Christchurch last summer has now appeared,¹ and proves to be well worth waiting for. In his explicit prefatory note Sir Arthur MacNalty refers to the certainty that raw milk was the vehicle of infection and to the strong probability that the retailers' bulk supply was infected by a relatively small contribution, itself produced without apparent fault. How the milk became infected is not actually proved but the late Dr Vernon Shaw who compiled the report now published gives sound reasons for assuming a connexion between this outbreak and a particular carrier. The sequence of events was as follows.

On August 21st the Ministry of Health received a telegram from the medical officer of health for Poole who reported a notification of a case of enteric fever stated that he had reason to believe others might occur and asked for assistance. An hour later a telegram was received from the deputy medical officer of health for Bournemouth reporting some cases of suspected food poisoning enteric type and also asking for assistance.

Dr Shaw was sent to investigate and on August 22nd was informed that 30 cases of enteric fever had been notified during the preceding 24 hours, and that a very large number of other potential victims were under observation. The patients were scattered throughout the three towns without distinction of age sex occupation or social status. Dr Shaw ascertained that the only factor common to all the patients was the consumption of raw milk retailed by one distributor. This distributor acting on Dr Shaw's advice adopted a method of commercial pasteurisation (heating the milk to 160° F) for the whole of his supply and distributed no unpasteurised milk after the morning round on August 22nd. It was correctly anticipated that this would prevent any further infection direct from the milk supply and that therefore no notification of a primary case of enteric fever would be received after the expiration of the incubation period² calculated from August 22nd plus a week or ten days during which a doctor might not be called in. Some of the alleged late cases were in fact relapses in patients who had failed to call in a doctor in the critical illness. So far as is known only four secondary cases occurred. Dr Shaw concluded that the milk had been infective for a period of about 31 days preceding August 22nd. The total number of known cases finally amounted to 718 (618 residents and 200 visitors). The deaths of residents numbered 51.

No source of infection could be discovered amongst the distributors or retailers. At the 37 scattered farms from which the milk was collected 102 persons were examined and at one farm 2 the wife and son aged 12 of the farmer were found to have enteric fever. Dr Shaw came to the conclusion that neither was the cause of the outbreak but that the milk produced at the farm was the source of infection of the retailer's supply and of the farmer's wife.

In the adjoining house a fatal case of enteric fever

had occurred in May 1934 when the water supply of both houses—common to eight other houses in the vicinity—was suspect. It was derived from a well 162 feet deep situated 100 yards from a small stream which ran within a few yards of the two houses. Repeated examination of the well water proved that it was liable to pollution although at times it yielded a good potable water. At a point about half a mile up stream from the farm the sewage effluent from a house was found to be discharging into the stream. Bacteriological examination of the effluent proved negative for *B. typhosus* in September and early October (4 tests) but the organism was present in large numbers late in October (2 tests). An occupant of the house during the material periods was found to be excreting typhoid bacilli in his faeces; he complied at once with the suggestions made to eliminate any further contamination of the stream.

Dr Shaw was satisfied that the outbreak was due to the consumption of raw milk contributions to the supply having been infected by the contaminated water of the stream. How the infection was conveyed from the stream to the milk whether by the use of the water of a certain well or by the cows subsequent to their drinking at the stream was not determined. The suggestion that a cow may excrete typhoid organisms in her dung or even in her milk is apparently a novel one which Dr Shaw found himself unable to reject.

Sir Arthur MacNalty from the results of the inquiry draws the inevitable conclusion that in the present state of our knowledge where large milk supplies and commensurate risk are involved the only practicable way to reduce the risk of such outbreaks to a minimum is by pasteurisation.

IRELAND

(FROM OUR OWN CORRESPONDENT)

THE NATIONAL HOSPITALS ASSOCIATION
A SET BACK

A LITTLE over twelve months ago a movement was begun to form an Association of Hospitals in Ireland on lines similar to the associations which exist in Great Britain the United States of America and other countries. Its functions were to be consultative advisory and educative. Some fifty hospital authorities expressed interest in the proposal. They included the governing bodies of nearly all the voluntary hospitals and a large proportion of the local authorities which have the control of hospitals. A preliminary meeting of representatives was held just a year ago and a provisional committee was appointed to draft a constitution. This task had been carried out and a meeting was about to be called to consider the draft scheme when it was discovered that the local authorities controlling the rate supported hospitals had no power to contribute toward the expenses of such an association. A deputation waited on the Minister for Local Government and Public Health who explained that he had no power to sanction any such payment by the local authorities. An appeal has been made to him that he should at the earliest opportunity introduce legislation to legalise such payment. As a dissolution of the Dáil is to take place within the next few weeks immediate legislation cannot be expected and the provisional committee of the Association has had no option but to advise that consideration of the

¹ Report on an Outbreak of Enteric Fever in the County Borough of Bournemouth and in the Boroughs of Poole and Christchurch. By Dr Vernon Shaw O.B.E. 31 D. 1 p. pubd. H.M.S. and sold. Lond. No. 81 1937. London. H.M. Stationery Office. 1p. 2s. 6d.

² For purposes of this inquiry an incubation period of 11 days was assumed. Dr Shaw observes that most authorities put it at 12-14 days, that it probably varies with the dose of the infecting organisms, but that it rarely lies outside 7-17 days.

draft constitution be postponed until legislation has been carried. The voluntary hospitals could not, by themselves, bear the financial burden of a hospitals association, and the project cannot be pursued unless the local authorities are given power to join. It is pointed out that the first public suggestion for the formation of a hospitals association came from the Hospitals Commission, the body appointed by the Minister to advise him how best to apply sweepstake funds to the development of the hospital system of the Irish Free State. In the report of the Commission published early last year, comment having been made on the lack of, and need for, coöperation between the hospitals, the formation of a hospitals association was advised. It is further pointed out that there are many precedents for permitting local authorities to pay the expenses of delegates sent to various congresses and conferences—health and engineering, for example, and that one important organisation in Ireland—the General Council of County Councils—is supported by the subscriptions of the several county councils as members. Have the payments in these cases been irregular? If so,

it is high time they were regularised, and such developments as a hospitals association made possible.

THE TWENTY FIRST HOSPITAL SWEEPSTAKE

The draw of the twenty first of the Irish Hospital Sweepstakes was held last week. As a rule the receipts for the sweepstakes on the Derby are smaller than those for the two other sweepstakes of the year, because the period of preparation is briefer. On this occasion, to the surprise of everyone, the receipts showed a slight advance on those for the Grand National, the draw for which was only two months before. In opening the draw Lord Powerscourt, chairman of the Associated Hospitals Committee, was able to announce that the total proceeds to the hospital funds up to the present amounted to £11,118,850. Three county hospitals, eight district hospitals, and three fever hospitals had already been completed out of these funds, and nineteen other hospitals were in course of construction. He had recently received from the Minister a most encouraging and satisfactory assurance as to the prospects of his scheme of hospitalisation.

MEDICAL NEWS

University of Cambridge

On May 28th the following degrees were conferred

M.D.—J. B. Harman
M.B., B.Chir.—J. W. Crofton, J. W. Hannay, T. E. S. Lloyd, W. J. E. Phillips, and G. F. Wright
M.B.—*F. R. Berridge, K. O. Black, F. G. Booker, *F. Braithwaite, T. C. Gipson, A. C. L. Hoult, A. R. Kelsall, C. R. McLaughlin, L. J. Panting, T. L. H. Shore, R. H. A. Swain, W. F. Walton, and J. Woodrow
B.Chir.—*T. M. Daniel

*By proxy

University of Oxford

In future any student who has successfully completed the first three years of a medical course at any university approved by the hebdomadal council may be admitted to the status and privileges of a senior student of the University of Oxford.

It is hoped to make an election at the end of this term to a William Hulme lectureship in physiology at Brasenose College, which will have an initial stipend of £350 a year. It will be tenable for three years and may be renewed for a further two years. Applications should be sent to the principal of Brasenose College before June 26th.

University of Glasgow

On Wednesday, June 9th, at 4.15 p.m., Prof. Ferdinand Sauerbruch, director of the University Surgical Clinic at Berlin, will deliver the fourth Macewen memorial lecture at the university. He will speak on advances in modern surgery and there will be a demonstration by cinematograph on the artificial hand which can be moved at will.

Society of Apothecaries of London

At recent examinations the following candidates were successful:

Surgery—J. R. Audy, Guy's Hosp., A. W. Box, Univ. of Camb. and Guy's Hosp., J. W. P. Morgan, St. Mary's Hosp. and W. G. Zorab, Guy's Hosp.
Medicine—A. Bagon, Univ. of Manch., P. A. Gardner, Guy's Hosp., F. de C. Kite, Univ. of Glasg., B. A. R. Pitt, Guy's Hosp., and R. H. S. Thompson, Univ. of Oxford and Guy's Hosp.
Forensic Medicine—A. Bagon, Univ. of Manch., P. A. Gardner, Guy's Hosp., F. de C. Kite, Univ. of Glasg., B. A. R. Pitt, Guy's Hosp., and R. H. S. Thompson, Univ. of Oxford and Guy's Hosp.
Midwifery—I. Bastawros, Royal Colleges, Edin., A. W. Box, Univ. of Camb. and Guy's Hosp., J. D. B. Perkins, Guy's Hosp., G. L. Young, Univ. of Camb. and St. Bart's Hosp., and W. E. Young, Univ. of Oxford and Guy's Hosp.

The following candidates, having completed the final examination, are granted the diploma of the Society entitling them to practise medicine, surgery and midwifery: A. Bagon, P. A. Gardner, B. A. R. Pitt, R. H. S. Thompson, and W. G. Zorab.

University of London

On May 10th the degree of Ph.D. in medical vital statistics (non clinical) was awarded to Ernest Lewis-Fanning.

University of Durham

At a special convocation to be held in connexion with the centenary celebrations of this University on July 1st and 2nd the hon. degree of D.C.L. will be conferred on Sir Cuthbert Wallace, president of the Royal College of Surgeons of England.

British Homœopathic Congress

This meeting will take place at the Langham Hotel, London, W., on June 17th and 18th. Further particulars may be had from the secretary, 69, Elizabeth street, London, S.W.1.

Bedminster Health Centre

The Lord Mayor of Bristol has opened a new health centre at Bedminster which provides all facilities for the supervision of the health of the pre-school and school child and for the expectant and nursing mother. The routine medical inspections of school-children attending 24 neighbouring schools and the maternity and child welfare services for South Bristol and Knowle will be concentrated here.

Silicosis Symposium

The third Silicosis Symposium will be held at the Saranac Laboratory, Saranac Lake, N.Y., in connexion with the Trudeau School of Tuberculosis, from June 21st to 25th. The meeting will be opened by Dr. Leroy Gardner, director of the laboratory, and at the first session Dr. A. J. Lanza will read a paper on the significance of the silicotic problem and Dr. R. R. Sayers one on the aetiology of silicosis. Prof. Philip Drinker will also open a discussion on dust concentrations and their measurement. On the second day Dr. Gardner will give the opening address in a discussion on the pathology of the pneumoconoses, while Prof. W. S. McCann will speak on the physiology of the fibrotic lung. On June 23rd Dr. E. P. Fendergrass will discuss roentgenologic aspects of the normal and silicotic lung and Dr. H. L. Sampson the roentgenologic diagnosis of silicosis. On June 24th Dr. A. R. Riddell will read a paper on the clinical picture and diagnosis of silicosis with consideration of disability, and Mr. D. E. Cummings on the occupational history. Dr. Riddell and Prof. Drinker will afterwards discuss the control of the disease from the medical and engineering aspects. At the last session Mr. Cummings will consider the administrative aspects of silicosis and Mr. T. L. Water legislative control and compensation.

National Hospital for Diseases of the Heart

On Thursday June 10th at 5 P.M. at 1 Wimpole street London, W. Dr C. Laury, professor of cardiology in the University of Paris will deliver the St. Cyres lecture of this hospital. His title will be *Considérations Pathologiques et Cliniques sur les Rythmes de Galop*

British Social Hygiene Council

Prof James Young director of the department of obstetrics and gynaecology at the British Postgraduate Medical School has been elected chairman of the medical advisory board of the Council in succession to Sir Farquhar Buzzard

Research Defence Society

At a meeting of this society to be held at the London School of Hygiene Reppel street London, W.C. at 3 P.M. on Tuesday June 15th Prof Grey Turner will deliver the eleventh Stephen Paget memorial lecture. He will speak on what research owes to the Paget tradition

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1 Wimpole-street W

TUESDAY June 8th

Therapeutics and Pharmacology 5 P.M. Annual general meeting. Dr A. Looser (Frankfurt): Hyperthyroidism and the Thyrotrophic Hormone of the Pituitary

FRIDAY

Ophthalmology 5 P.M. Annual general meeting. Mr E. F. King: The Epithelial Growth of the Conjunctiva and Cornea

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

THURSDAY June 10th—8.30 P.M. (11, Chandos-street W.) Dr T. A. Ross: The Psychological Approach

KENSINGTON MEDICAL SOCIETY

TUESDAY June 8th—8.30 P.M. (St. Mary Abbots Hospital, W.) Mr V. B. Green: Arterial The Value of Hystero-salpingography in General Practice

SOUTH WEST LONDON MEDICAL SOCIETY

WEDNESDAY June 9th—9 P.M. (Rollingbrooke Hospital, Wandsworth Common) Dr C. E. Leake: Physical Signs—Are They Worth While? (Rollingbrooke lecture)

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

TUBERCULOSIS ASSOCIATION

THURSDAY June 10th, FRIDAY and SATURDAY—Annual Provincial Meeting at the Central Library Manchester

NATIONAL HOSPITAL FOR DISEASES OF THE HEART

THURSDAY, June 10th.—3 P.M. (1, Wimpole-street W.) Prof. C. Laury: *Considérations Pathologiques et Cliniques sur les Rythmes de Galop* (St. Cyres lecture)

BRITISH POSTGRADUATE MEDICAL SCHOOL Duncannon W

TUESDAY, June 8th—4.30 P.M. Dr D. Hunter: Occupational Diseases

WEDNESDAY—Noon clinical and pathological conference (medical). 2 P.M. Dr Janet Vaughan: The Histiocytoses. 3 P.M. clinical and pathological conference (surgical). 4.30 P.M. Prof. M. Greenwood: *Experimental Epidemiology*

THURSDAY—4 P.M. Dr Duncan White: Radiological Demonstration 3 P.M. operative obstetrics. 5.30 P.M. Mr A. K. Henry: Demonstrations of the Cadaver on Surgical Exposures

FRIDAY—3.30 P.M. Mr Ru sell Howard: Disease of the Breast 3 P.M. clinical and pathological conference (obstetrics and gynaecology)

Daily 10 A.M. to 4 P.M. medical clinics surgical clinics and operations obstetrical and gynaecological clinics and operations refresher course for general practitioners

WEST LONDON HOSPITAL POST-GRADUATE COLLEGE, Hammersmith W

MONDAY, June 7th—10 A.M. Dr Frost: X-Ray Film Demonstration Skin clinic 11 A.M. surgical wards 2 P.M. operation surgical and gynaecological ward medical surgical and gynaecological clinics. 4.15 P.M., Mr Green: Amniotome: Abortion

TUESDAY—10 A.M. medical wards. 11 A.M. surgical wards 2 P.M. operations medical surgical and throat clinics. 4.15 P.M. Dr Hugh Gordon: Treatment of Acute

WEDNESDAY—10 A.M. children's ward and clinic 11 A.M. medical wards 3 P.M. gynaecological operations medical surgical, and eye clinics 4.15 P.M. Mr Harvey Jackson: Disease of the Rectum

THURSDAY—10 A.M., neurological and gynaecological clinics Noon fracture clinic 2 P.M., operations medical, surgical, multi-organ and eye clinics 4.15 P.M. Mr Simmonds: *Pyloric Stenosis*

FRIDAY—10 A.M. Medical wards skin clinic. Noon lecture on treatment 3 P.M., operations, medical surgical, and throat clinics 4.15 P.M. Mr Vissio: *Hemorrhoids*

SATURDAY—10 A.M., children's and surgical clinics 11 A.M. medical wards

The lectures at 4.15 P.M. are open to all medical practitioners without fee.

HOSPITAL FOR SICK CHILDREN Great Ormond street London W.C.

THURSDAY, June 10th.—6 P.M. Mr T. Twistington Higgins: Examination of the Urinary Tract. 3 P.M. Dr Alan Moncrieff: The Purpurae

Out patient clinics daily at 10 A.M. and ward visits at 2 P.M.

ST MARY'S HOSPITAL W

TUESDAY June 8th—9 P.M. (Institute of Pathology and Research) Dr Wilton Smith: The Influenza Problem

SOUTH WEST LONDON POST-GRADUATE ASSOCIATION

WEDNESDAY June 9th—Visit to Ford Motor Works Dagenham

ASSOCIATION OF CLINICAL PATHOLOGISTS

SATURDAY, June 12th—9.30 A.M. (Royal East Sussex Hospital, Hastings) Discussion on Blood Transfusion and Selling Lectures to be opened by Prof. A. E. Boycott, F.R.S. Subsequent speakers: Dr H. E. Brewer (Organisation: Medical Administration of a Voluntary Blood Transfusion Service); Dr H. O. Dyke (Organisation of a Blood Transfusion Service); Dr J. A. Boycott (Grouping of Donors and Recipients); Dr H. L. Marriott and Dr A. Hewick (Continuous Drip Blood Transfusion); Dr R. J. V. Pulverstein (Abnormal Reaction following Blood Transfusion); Dr P. Lazarus Barlow (Direct Blood Transfusion); Dr F. A. J. Hott (Transfusion in Aplastic Anaemia and Agranulocytosis); Dr Norah Schuster (Storage of Blood); Dr V. Hamilton Luley (Intravenous Haemolysis with Special Reference to Pseudo-Methemoglobin Production); Dr Robert Officer (Post-operative Saline Treatment); Dr Janet Vaughan: Demonstration of Specimens from a Case of Osteoclerosis with Leucocythroblastic Anaemia; Dr Lazarus Barlow: New Method of Filtering Anti Culture Media

MANCHESTER ROYAL INFIRMARY

TUESDAY June 8th—4.15 P.M. Dr E. W. Twining: The Haemology of Intracranial Suppuration

FRIDAY—4.15 P.M. Dr Norman Klets: Demonstration of Medical Cases

Appointments

CAMPION JAMES M.D. Belf., D.P.H., Deputy Medical Superintendent at Booth Hall Hospital Manchester

DOMINICI I. M.D. Lond., Clinical Pathologist to the Mount Vernon Hospital, Northwood

GLASS, MARJORIE A. M.D. Glasg., D.P.H., Assistant School Medical Officer for Barking

HOGG, WILLIAM M.B. Lond. D.P.H. Assistant Medical Officer of Health for Barking

HULL, F. R., M.B. Belf., D.P.M. Deputy Medical Superintendent at Calderstones Certified Institution, Whalley

LAUREN, J. M.D., M.R.C.P., F.R.C.S. Edin. Medical Superintendent at the Sharncliffe Green Hospital, Preston

O'KEEFE, E. J. M.R.C.S. Eng., D.P.H., Assistant Medical Officer of Health for Belper

TODD, J. S. M.B. Edin., Surgical Registrar at Aberdeen Royal Infirmary

British Postgraduate Medical School—The following appointments are announced—

CAMBERLAND, L. I. M.D. Lond. Demonstrator in Clinical Medicine

HOPKINS, H. L. M.B. M.R.C.P. Lond. Demonstrator in Clinical Medicine

KREMER, M. D., M.R.C.P. Lond. Demonstrator in Clinical Medicine

British Royal Infirmary—The following appointments are announced—

BUSH, G. D., M.D. Bristol, D.M.R.C., Hon. Radiologist

ADAMS, R. D., M.D. Bristol, D.M.R.C., Hon. Radiologist; and

DEWLEY, A. A. M.D. Dubl., D.M.R.E. Radiodiagnostician

Certifying Surgeons under the Factory and Workshop Acts: Mr H. MOIN (Curry District Middleham); Dr G. O. TAYLOR (Dorchester District Dorset); Dr ANDREW LAW, Jun. (Kilbride District Dnt); Dr A. E. FLETCHER (Dartford District Kent); Dr W. L. EVES (Chichester District Dorset); Dr L. E. STREETER (Alderbury District Middlesex); Dr J. B. DONALD (Warminster District Wiltshire)

Medical Referee under the Workmen's Compensation Act, 1925: ATTILLI ROBERTSON, M.D., of Olney, Argyl for the Oban Sheriff Court District (Sheriffdom of Argyl)

Subject to confirmation.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary—Res Cas O for Out patient Dept. £200
Annie McColl Maternity Hosp 165 Clapham road, SW—Sen and Jun H S's
Ashton under Lyne District Infirmary—Cas H S £180
Aylesbury, Royal Buckinghamshire Hosp—Sen Res M O at rate of £200
Barnsley Beckett Hosp and Dispensary—H S, £200
Bath and Wessex Children's Orthopaedic Hosp Combe Park—H S at rate of £120
Bath Royal United Hosp—Hon Asst to Fracture Service Also H P at rate of £150
Battersea General Hosp Battersea Park SW—Res H P and Cas O at rate of £120
Bedford County Hosp—Second H S at rate of £150
Birmingham Dudley road Hosp—Jun M O at rate of £200
Birmingham Selly Oak Hosp—Jun M O's each at rate of £200
Bolton Royal Infirmary—H P and Two H S's at rate of £200 and £150 respectively
Bradford Children's Hosp—H S, £150
Bradford Royal Eye and Ear Hosp—Two H S's each £180
Brighton Municipal Hosp—Third Res Asst M O £300
Brighton, Royal Alexandra Hosp for Sick Children—H P £120
Brighton Royal Sussex County Hosp—Hon Surg Reg H P, £150 Also Cas H S £120
Bristol General Hosp—Two H P's Three H S's, Res Obstet O H S to Spec Depts each at rate of £80 Also Cas H S, at rate of £100
British Postgraduate Medical School W—Three H S's to Surgical Unit at rate of £105
Burnley Municipal General Hosp—Jun Res M O at rate of £150—£200
Canterbury Kent and Canterbury Hosp—Hon Surgeon
Cardiff King Edward VII Welsh National Memorial Assoc—Res Asst Tuberc M O, £500
Central Middlesex County Hosp Willesden—Visiting Ear Nose and Throat Surgeon 3 guineas per session Two Res Asst. M O's each £400 Also Res Cas M O, £350
Cheltenham General and Eye Hosps—H P £150
Chesterfield and North Derbyshire Royal Hosp—H S at rate of £150
City of London Maternity Hosp City road EC—Asst Res M O at rate of £80
Colchester, Essex County Hosp—H S £175
Colonial Medical Service—Associate Prof of Medicine, Singapore £1190
Corentry and Warwickshire Hosp—Res H S Cas O, and Res H S to Aural and Ophth Depts each £150
Croydon Mental Hosp Upper Warlingham—Asst M O, £400
Derbyshire Hosp for Sick Children—Res H S at rate of £130
Derbyshire Royal Infirmary—Cas O and Orthopaedic H S £150
Down County Mental Hosp Downpatrick—Jun Asst M O £250
Dreadnought Hosp, Greenwich S.E.—Receiving Room Officer, at rate of £200 Also H P and H S each at rate of £110
Durham County Council—Deputy County M O H, £900 Also Asst Welfare M O £500
East Ham Memorial Hosp, Shrevebury road E—Hon Surgeon to Orthopaedic Dept Also two Anesthetists, each 1 guinea per session
Gloucestershire Royal Infirmary and Eye Institution—H P and H S each at rate of £150
Golden square Throat Nose and Ear Hosp W—House Anesthetist and H S £150 and £100 respectively
Hampstead General and North West London Hosp Haverstock hill, N W—Cas Surg O for Out patient Dept and H S each at rate of £100
Hertfordshire General Hosp—Res Surg O and H P £150 and £100 respectively
Hertford County Hosp—Res Surg O at rate of £250
Histon and Isleworth Borough—Asst M O H and School M O, £500
Holland (Lincolnshire) County Council—Asst M O H £600
Hosp for Tropical Diseases Gordon street W C—H P at rate of £120
Huddersfield St Luke's Hosp—Res M O £200
Hull Royal Infirmary—Second H P and H S to Ophth and Ear Nose and Throat Depts each at rate of £150 Also H S for Branch Hospital at rate of £160
Ipswich East Suffolk and Ipswich Hosp—Cas O H S to Orthopaedic and Fracture Dept and H S to General Surgeon and Genito Urinary Surgeon each £144
Jamaica Lunatic Asylum—Med Supt £750
Kettering and District General Hosp—Res M O and Second Res M O at rate of £160 and £140 respectively
Lancaster County Mental Hosp—Asst M O £500
Leicester Royal Infirmary—Res Radiologist at rate of £200
Liverpool County Mental Hosp Rainhill—Second Asst M O £650 Also Asst. M O 7 guineas per week
Liverpool Hahnemann Hosp Hope street—Res M O at rate of £120
London County Council—Asst M O's (Grade I) each £350 Asst M O's (Grade II) each £250 Also Part time M O for Ashford Residential School £285
London Jewish Hosp Stepney Green, F—Res Cas O £100
London University—Laura de Saliceto Studentship £150 Also Examinerships

Maidenhead Hosp—Res M O at rate of £150
Manchester Ancoats Hosp—H S to Ear Nose and Throat Dept, at rate of £100
Manchester and Salford Hosp for Skin Diseases—H S. at rate of £150
Manchester Booth Hall Hosp for Children—Res Surg O £400
Manchester Ear Hosp Grosvenor square—Res H S £120
Manchester Park Hosp Darcyulme—Second Res M O at rate of £225
Manchester Royal Children's Hosp—Sen M O £300
Manchester Royal Infirmary—Jun Asst M O (Locum) to Radiological Dept, 8 guineas per week
Manchester St Mary's Hosp—H S's each at rate of £50
Manchester Withington Hosp—Res Obstet. O, £350 Also Res Asst M O at rate of £200
Marie Curie Hosp, 2 Fitzjohn's-avenue, N W—Asst. Director
Middlesbrough North Riding Infirmary—Sen H S and Third H S at rate of £175 and £140 respectively
National Temperance Hosp Hampstead road N W—Cas O at rate of £120
Newcastle General Hosp—Two H S's and H P each at rate of £150
Newcastle upon Tyne Barrasford Sanatorium—Res Med. Asst. £250
Newport, Mon Royal Gwent Hosp—Two H S's each at rate of £135
Norwich Jenny Lind Hosp for Children—Res M O £120
Norwich Norfolk and Norwich Hosp—Two General H S's each £120
Nottingham County Council—H S for City Hosp, at rate of £250
Nottingham General Hosp—Res Cas O and H S to Ear Nose and Throat Dept each at rate of £150
Paddington Green Children's Hosp W—H S at rate of £150
Penshurst, Cassel Hosp for Functional Nervous Disorders Swaylands—Medical Director £1200—£1500
Plymouth City Hosp—Deputy Med Supt. £450
Plymouth Prince of Wales Hosp, Devonport—Jun H S, at rate of £120
Pontefract General Infirmary—Jun Res M O, at rate of £150
Preston County Borough—Asst School M O £500
Princess Louise Kensington Hosp for Children St Quintin avenue W—H S at rate of £120
Putney Hosp Lower Common S W—Jun M O., at rate of £100
Reading Royal Berkshire Hosp—Res Cas O, at rate of £150
Richmond Surrey Royal Hosp—Jun H S at rate of £100
Rotherham Hosp—H S for Ophth and Ear, Nose and Throat Depts, £120
Royal Northern Hosp, Holloway N—H S at rate of £70
St Helens County Borough—Asst M O H, £500
St Pancras Metropolitan Borough—Asst M O for Antennata Clinic 11 guineas per session
St Peter's Hosp for Blind, &c Henrietta street W C—Clin Assts to the Hon Staff
St Thomas's Hosp S E—Physician
Salford, Hope Hosp—Asst Res M O at rate of £200
Salford Infectious Diseases Hosp—Jun Asst Res M O £200
Salford Royal Hosp—Two H S's each at rate of £125
Salisbury General Infirmary—Res M O £250 Also H P at rate of £125
Sheffield Children's Hosp—H S £100
Sheffield Jessop Hosp for Women—Asst in Hosp Labs £300
Res M O and Sen Res O, each at rate of £150 Also Three H S's each at rate of £100
Sheffield Royal Infirmary—Ophth H S, at rate of £120 Also H S and Aural H S each at rate of £80
Southampton Royal South Hants and Southampton Hosp—Cas O and Res Anesthetist and H S to Ear Nose and Throat Dept, each at rate of £150
Southend-on Sea General Hosp—Res Obstet O at rate of £100
Southern Rhodesia Medical Service—Government M O, £600—£750
South London Hosp for Women Clapham Common S W—Surg Reg £75
Stafford Prescot Sanatorium—Jun Asst M O at rate of £300
Stepney Metropolitan Borough—Asst Tuberc O £500
Stoke-on Trent, Burslem Haywood and Tunstall War Memorial Hosp—Res H S at rate of £175
Stoke-on Trent Longton Hosp—H S £160
Stoke-on Trent, North Staffordshire Royal Infirmary—H S for Aural and Ophth Dept at rate of £150
Surrey County Council—Jun Asst M O for County Sanatorium at rate of £350
Surrey County Hosp Redhill—Res Asst. M O, at rate of £375
Swansea County Borough Mental Hosp—Asst M O £100
Swansea General and Pys Hosp—H S at rate of £150
Taunton Somerset and Bath Mental Hosp—Res Second Asst. M O £350
Tilbury Hosp Essex—H S at rate of £140
Wakefield Clayton Hosp—Sen H S £210
Walford and District Isaac Memorial Hosp—H S, at rate of £150
Wembley Urban District Council—Asst M O H £200
West London Hosp Hammermith road, W—Jun Asst M O for V D Dept. £350 Also H P and Two H S's each at rate of £100
Willesden General Hosp Harlesden road N W—Cas O at rate of £100
Winchester Royal Hampshire County Hosp—H S £125
Worcestershire Mental Hosp Barnsley Hall—Deputy Med Supt £450
Workshop 1 Idonia Hosp—Jun Res, £130
York Bootham Park Mental Hosp—Med Supt £300
The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Plymouth (Devon) and Folkestone (Kent)

NOTES, COMMENTS, AND ABSTRACTS

REFUGEES AT AN ENGLISH PORT

As medical officer of health for Southampton, Dr H C Maurice Williams sends us a lively account of the arrival there on May 22nd of the Spanish liner *Itabana* with 4058 refugees from Bilbao. At 5 P.M. on the Saturday the ship was signalled off the Needles, and the port sanitary staff accompanied by customs and immigration officials left the docks in the port sanitary launch to board her as arranged. Another launch followed with supplies of milk glucose meat extracts and medical requisites.

It was an extraordinary spectacle. Dr Williams writes to see a vessel normally capable of carrying between 400 and 500 passengers, steaming up Southampton Water with every inch of her decks covered with human beings. Even more extraordinary were the conditions found on board. Children all herded together in the public rooms, in the alleyways and on all the decks. Some were lying rolled in blankets, others running about the ship screaming and a few cool and complacent appeared to accept the circumstances of their arrival in a strange land having been parted from their parents, without any emotion. It was with some difficulty that we were able to reach the ship's hospital to see a boy of 12 who, later the same evening was removed by launch and ambulance to the borough hospital for an operation on a strangulated testicle.

The ship was permitted to proceed to an inner mooring station next morning for a detailed medical inspection of all persons on board. On the Sunday morning hundreds of the public with press representatives and photographers had collected along the quay but no one without an official pass issued by the port sanitary department was permitted to approach the ship's berth or go on board. The names and addresses of all who were given these official passes were recorded in order that the health authorities throughout the country might keep them under a surveillance in the event of any major infection being discovered amongst the persons on board. The adults accompanying the children were first examined. The saloons were then cleared of all except those taking part in the medical and immigration inspection, and within half an hour the children were lined up in queues and the inspection began.

"Nine medical officers of the department each in a separate screened cubicle took up their positions in the line of the queue. A health visitor assisted each doctor by stripping the children to the waist. The child was then examined, special attention being paid to an examination of the eyes for trachoma, the head for ringworm lice or nits, and the skin for rashes and lice. The heart and lungs were also examined in detail to decide on those fit to live under canvas.

"On completion of the examination each child was dressed by a health visitor and passed on in the queue to a sanitary inspector who stamped the identification card attached to each child indicating that the child had been medically examined. In addition he also tied a coloured tape on the child's left wrist which served as a code as to the destination of the child. White tape indicated clean and allowed the child to proceed direct to camp. Red tape indicated verminous and to proceed to the corporation bath for de-lousing. Blue for infectious or contagious conditions to proceed to the isolation hospital or other institution. Blue and white tapes for any other condition requiring general hospital treatment.

After the medical inspection was completed each child was passed on to the immigration officer who stamped the disc with his official stamp and the child then proceeded down the main gangway at the foot of which sanitary inspectors and health visitors collected them into groups according to the colour of the tapes and arranged for their immediate disposal in the following ways: Clean children went direct by motor omnibuses to the camp. Verminous children were taken in lorries to the corporation bath for de-lousing and the hospital cases were transported by the corporation ambulances to the appropriate institutions.

Many of the children were thin but the general impression gained especially before they stripped was that they were for the most part, an alert, intelligent group of children who compared favourably in physique with our own children. The clothing generally was very good and when the clothing of the verminous ones was taken away from them for disinfection many of them wept.

At the corporation baths we were allowed to use 40 of the slipper baths, and with the assistance of many voluntary and willing helpers together with twelve barbers 712 of the children were de-loused and fitted with complete sets of clothing the latter being supplied by the Spanish Relief Committee.

At 7 P.M. on the Sunday medical inspection ceased for the day. The medical staff had worked continuously for ten hours and had disposed of 9278 children. On the following morning the remainder were examined and completed by 11 A.M.

DR RIADORE AND THE EFFECTS OF SPINAL IRRITATION

Mr D O Thomson, writing from the registered office of Osteopathic Trusts Ltd complains that in the opening sentence of an annotation entitled

What is Osteopathy? in our issue of April 10th we pled its American origin to discredit this theory of healing. He goes on to say: although Still began to elaborate on his initial heresy at the end of the nineteenth century a British doctor preceded him in a tentative announcement of similar conclusions. Many years earlier namely in 1842 was published in England an interesting suggestive treatise on Irritation of the Spinal Nerves as the source of Nervousness Indigestion Functional and Organical Derangements of the Principal Organs of the Body by J Evans Riadore, M.D. and of the Royal College of Surgeons London. In this book the author discusses a lengthened catalogue of maladies which are either engendered by continued by or the consequence of either spinal irritation or inflammation, with or without curvatures of the spinal column—a class of disease of no small importance, whether we regard their frequency or the suffering and danger which attend them the nature of which in consequence of our erroneous views of the animal economy has been overlooked, and the sufferer thus deprived of all chance of effectual assistance from our art.

Dr Riadore's name appears in the London Medical Directory for 1846 with the qualifications M.D. Glissen and M.R.C.S. (April 4th 1817) and an address at 73, Harley-street.

NEW PREPARATIONS

EXAMIN—What is described as the purest and most highly concentrated liver extract ever achieved on a manufacturing scale has been put on the market by Glaxo Laboratories Ltd Greenford Middlesex. On Jan. 10th last in our correspondence columns, Laland and Klem of Oslo described this product and mentioned that it would be made available shortly. Each 2 c.cm ampoule is said to contain in an average of 10–15 mg. of solids the haemopoietic factor extracted from 100 g. of fresh liver. The initial dose in relapse is given as 4 c.cm by injection and the maintenance dose at fortnightly intervals as 2 c.cm. It is claimed that Examin does not cause pain after injection and does not give rise to allergic reactions. It can be administered intravenously in emergency.

NAVIGAN—Last year we published reports on the use of Syntropan with Sedormid as a preventive and remedy for sea-sickness (*Lancet* 1936 i 220, 1213). Syntropan (a diethylaminodimethylpropyl ester of tropic acid) is a synthetic antispasmodic substance related to atropine which depresses the action of the vagus, and especially its action on the

digestive tract. Sedormid, the sedative experimentally associated with it, has now been replaced by a pyridine derivative chemically known as dihydroxy-diethylpiperidine, which is described as a mild sedative-hypnotic having pharmacological properties resembling those of carbomalum B.P. The manufacturers, Roche Products Ltd (51, Bowes road, London, N 13), call their new syntropan preparation Navigan and recommend it both for the prevention of travel-sickness (air, sea, train, car) and, more tentatively, as an antispasmodic in abdominal colic. Navigan is given by mouth in small tablets, or, if need be, in suppository form. Accounts of its use at sea have been encouraging.

"WELLCOME" BRAND WHOOPING COUGH VACCINE
In issuing their vaccine made from recent strains of *Haemophilus pertussis* (Bordet-Gengou bacillus) Burroughs Wellcome and Co point out that there is no satisfactory laboratory test for potency and that batches of vaccine made in different parts of the world may not all be effective in preventing whooping-cough. In the attempt to secure immunity against this serious disease inoculation in infancy is advised, preferably between the 7th and 10th months. Kendrick and Elderling's technique comprises five subcutaneous injections (at weekly intervals) with a total of 70,000 million organisms. Madsen gives less and Sauer more. The reactions seem to be somewhat more troublesome than those of anti diphtheria immunisation, especially in older children. If the vaccine is used for treatment—on which opinions differ—it should be used early. It is prepared at the Wellcome Physiological Research Laboratories, Beckenham, Kent.

FOLINERIN is a crystalline glucoside obtained from the leaves of the oleander shrub (*Nerium oleander*) and marketed by Schering Ltd, 185, High Holborn, W O 1. It is intended for administration, by mouth, in cases where digitalis would normally be given but a more rapid and constant action is desirable. It is said to be a more powerful diuretic than digitalis and to have a more persistent action on the heart. Stability towards acids prevents its decomposition in the stomach, and as a rule it causes no nausea.

KINOO PURE SILK BABY POWDER—The manufacturers, Kinu Ltd (6, Finsbury-square, E C 3), state that every tin of their Kinoo Baby Powder contains at least 90 per cent of pure cocoon silk, with about 5 per cent of boric acid and 5 per cent of zinc oxide. The powder is soft and silky to the touch as might be expected from its origin, and it is said to be free from the disadvantages sometimes attached to talc, chalk, starch, kaolin, and other substances often applied to the skin. Among its virtues are "great absorbency without the possibility of fermentation, dissolution, or the formation of a smeary paste."

ZEPHIRAN CONCENTRATE is a new antiseptic made by Bayer Products Ltd (Africa House, Kingsway, W C 2). It is described as a watery solution of a mixture of alkyl dimethylbenzylammonium chlorides, forming a faintly perfumed colourless fluid which does not stain clothes or dressings. Subcutaneous and intracutaneous injections of a 1 in 100 dilution into the ear and abdominal skin of a rabbit are stated to cause no irritation of the tissues, and rabbits tolerate 3-5 c cm per kg of body-weight, taken by mouth. Tests at a London teaching hospital have shown a Rideal-Walker coefficient (*Bacillus typhosus*) of 75, but the action of the disinfectant for certain other organisms is relatively greater, and comparable figures for haemolytic streptococci *Staphylococcus aureus*, and pneumococci are given as 27, 31, and 137 respectively. In concentrations up to 1 in 500 Zephiran Concentrate makes a strong lather and no soap need be employed when it is used for disinfection of the hands. When it is employed for sterilising instruments anti rust tablets should be added, and these are supplied free on demand. The manufacturers claim that even when

it is diluted with equal parts of serum their antiseptic retains very considerable bactericidal power.

Wishing to show that BISODOL is more than a crude mixture of its component parts, the makers (Bisodol Ltd, 12, Chenies street, W C 1) invited us to see its manufacture. The ingredients are sodium bicarbonate, light magnesium carbonate, and bismuth subnitrate, with the ferments diastase and pepsin, and special attention is paid to their subdivision in the powder, for on this depends the uniformity of the suspension formed when water is added. After a preliminary mixing the powder materials are passed through a fine-mesh silk screen into a mixing chamber, where they are stirred with revolving blades for two hours. Peppermint oil is here added in a fine spray from an atomiser.

BISMUTH THERAPY. CORRIGENDUM.—In a note published on May 22nd reviewing a booklet issued by Pharmaceutical Specialities (May and Baker) Ltd., reference is made to a technique for intravenous injection of bismuth. Actually the technique described was for intramuscular injection, its object being to ensure that the needle is *not* in a vein, and the manufacturers did not suggest that bismuth can be given by the intravenous route.

MENTAL HYGIENE CONGRESSES IN PARIS—The second International Congress on Mental Hygiene will be held in Paris from July 19th to 24th under the presidency of Dr Edouard Toulouse. The congress will meet at the Centre Marcelin Berthelot, Maison de la Chimie, 28 bis, rue Saint Dominique, Paris, VII. Copies of the final programme of the meeting may be had from the secretary of the National Council for Mental Hygiene, 76, Chandos House, Palmer street, London SW 1.

From July 24th to August 1st the first International Congress of Child Psychiatry will meet at the same place. The inaugural address will be given by Prof H Wallon, who will speak on the neurophysiological principles of child psychiatry. Other subjects which will be discussed are conditioned reflexes in child psychiatry, methods of education according to disturbances of intelligence and character in children and mental debility as a cause of delinquency in children and adolescents. Further information may be had from Dr Grumbert, 11 rue Duroc, Paris, VII.

Births, Marriages, and Deaths

BIRTHS

HYATT—On May 21st, at Everecreech Somerset, the wife of Major J W Hyatt R.A.M.C. of a son.
JACKSON—On May 23rd at Devonshire place W, the wife of Mr Harvey Jackson F.R.C.S. of a son.
PANTIN—On May 25th at Bentinck street W the wife of Dr Guy Pantin of a daughter.

MARRIAGES

GOADBY—BOGGON—On May 22nd at Winchester Cathedral Hector Kenneth Goadby M.D., F.R.C.P. only son of Sir Kenneth Goadby K.B.E. and Lady Goadby to Margaret Evelyn daughter of Mr R O Boggon O.B.E. of Worthing formerly of H.M. Dockyard, Portsmouth.

DEATHS

COLLINS—On May 24th at Manor Park E Richard Hawtrey Collins, M.D. Brux., M.R.C.S. Eng. aged 74.
HCOILL—On May 28th at Streatham Park S.W., George Frederick Hugill M.D. Durh.
KEMPER—On May 20th at Edinburgh Arthur Thomas Kemper, F.R.C.S. Edin. for many years medical missionary at the O.M.S. Hospital Hang-chow China.
LANGTON—On May 27th following an operation in Kampala Edward Athol Clarence Langton M.R.C.S. Eng. Uganda Medical Service aged 48.
LEE—On May 26th in London William Emerson Lee M.D. Camb. of The East Sussex Club St. Leonard-on-Sea, aged 61.
PAULSON—On May 20th at Heybrook Bay near Plymouth, William Paulson L.R.C.P. Lond. late of Mountsorrel Leicestershire and Dartmouth in his 95th year.
SHORNEY WEBB—On June 1st, at the Middlesex Hospital C H Shorney Webb M.S. F.R.C.S.
WALLER—On May 20th at Stroud Glos Alfred Whalley Waller M.D. Durh. M.R.C.S. Eng.

A fee of 7s 6d is charged for the insertion of Notices of Births, Marriages and Deaths.

ADDRESSES AND ORIGINAL ARTICLES

SIMPLE NON SPHINCTERIC SPASM OF THE OESOPHAGUS

Br JOHN E G MCGIBBON, M.B. B.S. Lond. D.L.O.
HOY LARYNGOLOGIST TO THE ROYAL SOUTHERN HOSPITAL,
LIVERPOOL AND

J H MATHER, M.B. B.Sc. Liverp. D.M.R.E.
HOY RADIOLOGIST TO THE HOSPITAL

SPASM is the most common individual manifestation of oesophageal disease, and in the gullet its significance as an entity is probably greater than in any other tubular organ of the human body. In fact as Barclay (1931) has stated when discussing the radiology of the oesophagus spasm may be responsible for the whole of the symptomatic disturbance presented by any intrinsic or extrinsic lesion.

It may be the sole radiological abnormality observed in such varying pathological states as intra-oesophageal injury, impaction of small non-opaque foreign bodies, oesophagitis, central and peripheral nervous lesions, and it may mask completely an early oesophageal malignancy. Teschendorf (1928) has described such a case in which a carcinoma of the oesophagus became obvious by radiological examination only after the accompanying spasm had been dissipated by an injection of atropine.

CLASSIFICATION

Anatomically spasm that develops at either the upper or lower (sphincteric) extremity of the oesophagus can be regarded as distinct from that arising in the intervening (non-sphincteric) part although their pathology probably is similar. Non-sphincteric spasm may be present in an apparently healthy oesophagus, or it may accompany a true intrinsic lesion. In the earlier articles the former was designated a primary functional or "idiopathic" spasm and the latter a secondary spasm. Consideration of the aetiology of non-sphincteric spasm of the healthy oesophagus shows that a so-called primary spasm is usually due to an altered state or disease of some other organ of the body and the term simple non-sphincteric spasm will be used to describe this lesion in the following notes.

Abel (1929) has classified spasm of the non-sphincteric portion of the oesophagus on an aetiological basis as follows—

- (1) Psychological oesophagismus.
- (2) Reflex oesophagismus—i.e. spasm secondary to disease of other organs.
- (3) Symptomatic oesophagismus—i.e. spasm due to (a) disease of the oesophagus itself; (b) organic disease of the central or peripheral nervous system; or (c) toxic lesions.

All of the above except spasm due to oesophageal disease (3a) and some toxic cases (3c) can be included under the title of simple non-sphincteric spasm.

EXTENT AND TYPES

Simple non-sphincteric spasm may affect one or more segments of the oesophagus, its entire extent or a varying portion of its length and according to the radiological appearances observed the following types may be described and are shown diagrammatically in Fig. 1—

- 1 Localised spasm (Fig. 1 B)

5937

2. Diffuse spasm:
 - (a) tetanic: (1) total (Fig. 1 C) (2) partial (Fig. 1 D)
 - (b) irregular (Fig. 1 E)
 - (c) functional diverticula (Fig. 1 F)

Each type may vary considerably in the same and different patients, and occasionally the various types may occur in the same individual.

Localised spasm is probably the most common type. It affects only a small annular segment or segments of the oesophagus (Fig. 7) and when more than two segments are contracted simultaneously

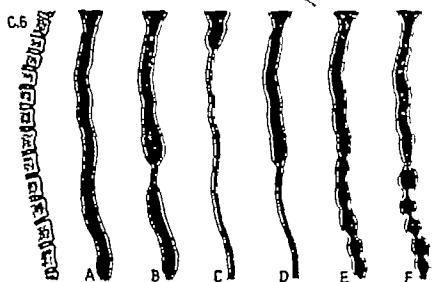


FIG. 1.—A. Normal oesophagus. B. Localised spasm. C. Total tetanic spasm. D. Partial tetanic spasm. E. Diffuse irregular spasm. F. Functional diverticula.

it is advisable to regard the lesion as a type of diffuse spasm. It may be present in any portion of the oesophagus and Reyner (1924) has stated that its site may vary in the same patient.

Diffuse spasm was recorded under this title by Moersch and Camp (1934) and should include the so-called functional diverticula described by Barsony and Polgar (1927) and by Gregoire (1926). The tetanic form of diffuse spasm may involve the entire extent of the gullet so that opaque food cannot enter its lumen and on radiological appearance obstruction at the inlet only may be diagnosed or it may be confined to the lower half or third of the viscous. Irregular spasm arises in that portion of the oesophagus controlled by unstriated muscle and it appears to be an exaggeration of its normal peristaltic contractions. Kohler (1928) holds that it is very difficult, indeed almost impossible to observe peristalsis in a normal oesophagus or even above an organic stricture so that the radiological appearance of this type of spasm are very striking and are well shown in Fig. 4. Functional diverticula (Fig. 8) become manifest only at the height of muscular contraction and they are due to the development of spasticity of two or more segments separated by atonic areas. The radiological appearances vary from that of a simple arching of a small portion of the oesophageal outline to a mushroom or hat-shaped diverticulum. Gregoire (1926) has described the diverticula as pear-shaped dilatations which overhang the succeeding contracted segments. Often they are multiple—Barsony and Polgar (1927) report 5 cases out of 9 which were multiple—they arise at any level of the oesophagus and they are associated sometimes with atony of the entire organ or with localised spasm. A functional diverticulum may be the starting point of a true organic pulsion diverticulum, and the writers mentioned above observed such a development in one patient.

DURATION

As a rule all types of spasm are *transient*—there is only a tendency to spastic contraction of the oesophageal muscles, and when this does occur it is of short duration. Occasionally transient spasm is observed accidentally, this happened in Case 5 below, and it is probable that it is more common than is generally believed, but that it escapes recognition owing to its short duration and the absence of symptoms. Less often spasm is *intermittent* as in Cases 4 and 8 below—for example, spasm may occur after some special dietary, thermic or psychical stimulus. Very rarely spasm is *persistent* owing to the continuance of the exciting cause, or possibly to the development of a nerve-cell habit as described by Chevalier Jackson (1934). Thus in Case 2 spasm lasted for 3½ years, and in Case 1 for 7 weeks. Moersch and Camp (1934) have recorded notes of a patient in whom spasm was present for 9 years, and Barclay (1931) quotes Grier's account of a man with complete obstruction of the middle third of the oesophagus due to spasm which persisted for 2 months.

NERVE SUPPLY OF THE OESOPHAGUS

The type of spasm under discussion is a neurogenic manifestation, and it is necessary to consider briefly the nerve supply of the oesophagus. This is derived from the vagi and from the sympathetic chains and is shown diagrammatically in Fig 2. The vagal supply has been recognised for a long time and it is now definitely established that there is also a contribution from the sympathetic system. There are known branches from the inferior cervical ganglia and from the coeliac plexus, which accompany the left gastric artery, but the question of the existence of direct branches from the thoracic sympathetic ganglia is still controversial.

Kuntz (1929) is of the opinion that the sympathetic supply for the oesophagus comes chiefly from the

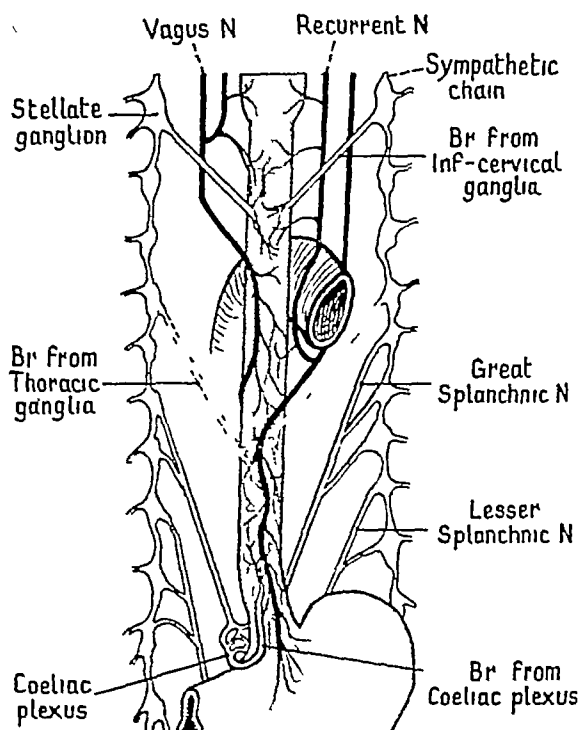


FIG 2.—Diagram of the nerve supply of the oesophagus.

inferior cervical ganglia but that further branches do pass directly from the thoracic ganglia, or from these ganglia via the aortic plexus or a plexus in the posterior mediastinum to the gullet. Other writers

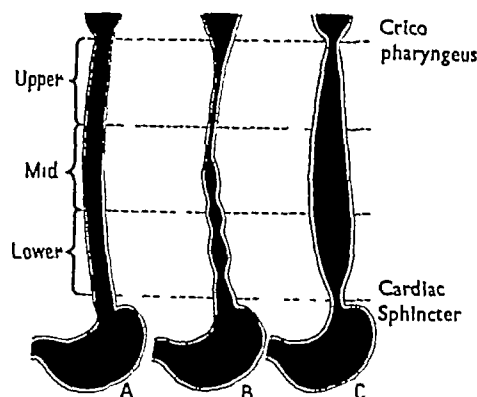


FIG 3.—A, Normal oesophagus. B, Stimulation of vagi or removal of stellate ganglia. C, Stimulation of sympathetic or division of vagi.

Effect of Nervous Impulses

Region of oesophagus	Stimulation of vagus alone	Bilateral removal of stellate ganglia	Stimulation of stellate ganglia	Bilateral division of vagi
Upper third	Tetanic contraction which only persisted with constant stimulation. No secondary waves.	Hyper-tonicity.	Nil.	
Middle third	Tetanic contraction followed by secondary waves.		Diminution of tone or increased contraction.	Dilatation with recurring peristalsis in the lower third.
Lower third	Increased tone and mobility which persisted or continued as a series of secondary waves.	Increased peristalsis. Sphincter normal.	Slight diminution of tone and mobility.	Contraction of sphincter.

doubt the existence of a thoracic sympathetic supply. The following short description is quoted from an article by Woollard (1935) —

"Slender sympathetic filaments from the inferior cervical and thoracic sympathetic ganglia travel alongside the intercostal vessels, but they are too small and delicate to trace beyond the front of the vertebral column and the aorta. It seems unlikely that the oesophagus receives other than a very scanty sympathetic supply from the adjacent ganglia. Sympathetic fibres, however, do reach the oesophagus from above, having entered the vagi from the cervical sympathetic chain. The other route by which sympathetic fibres may reach the cardia is by way of the coeliac plexus from which they may travel in company with the left gastric artery."

As a result of the findings of Cannon (1907), Meltzer (1898), and other investigators it is now generally agreed that vagal stimulation causes increased tone and mobility of the plain muscle portion of the oesophagus (Fig 3 B) and that sympathetic stimulation inhibits this (Fig 3 C). The experimental work of Knight (1935) has done much to explain the varying and often apparently contradictory results obtained by previous workers, for he has shown that the type of reaction obtained by stimulation of the extrinsic nerves of the oesophagus depends upon the nature—whether striated.

or unstrated—of the muscle content of the region under consideration. In Knight's experiments cats were used as their oesophagus approach most nearly to man in regard to distribution of striped and unstriped muscle and his conclusions are given in the Table and shown diagrammatically in Fig 3.

From a consideration of this it appears that spasm of the oesophagus might be caused by an abnormal increase of stimuli travelling via the vagi by a decrease or cessation of impulses via the sympathetic, or by an imbalance of the two sets of impulses. The origin of such excitatory or inhibitory impulses is still undetermined but the findings of Carlson Boyd and Pearcy (1922) who showed that stimulation of the gall bladder intestines and urinary bladder gave rise to oesophageal activity is suggestive and Alvarez (1928) has stated that inhibitions that are produced by fear, worry or illness probably travel by way of the sympathetic.

INCIDENCE

Simple non sphincteric spasm is not commonly diagnosed as probably in many cases the condition is of very short duration and its symptoms evanescent. Negus (1936) has stated that he has never observed a true example of simple spasm and that although he has examined patients who had been diagnosed as suffering from such by radiologists and physicians they ultimately proved to have an organic oesophageal lesion. Guibez (1923) is of the opinion that simple spasm of the non sphincteric portion of the oesophagus, except in its upper third, is never seen. Chevallier Jackson (1934) also questions its occurrence and Baldenweck (1925) regards these cases as rare and ephemeral, presenting only in neurotic females and alcoholics. These authoritative statements cannot be disregarded. On the other hand Moersch and Camp (1934) have reported a series of 8 patients with simple diffuse spasm. Tenchendorf (1928) and Barsony and Polgar (1929) all have recorded notes of large series of cases, and Sudhues (1932) has called attention to the presence of simple spasm in children. Brown Kelly (1936) considers that this type of obstruction in the oesophagus is quite common and the present series consists of 8 cases seen in the past five years 4 of which were described briefly during a recent discussion at the Royal Society of Medicine.

ETIOLOGY

This type of spasm may occur at any age. In our series the youngest patient was aged 8 months and the oldest was 70 and it affects both sexes equally. Many theories on the cause of simple non sphincteric spasm have been advanced.

Congenital inferiority of the sympathetic nervous system in children has been suggested by Sudhues (1932) and Brown Kelly (1936) is of the opinion that in such young patients there may be a congenital predisposition to spasm which occurs only when the child is ailing or thwarted.

Nervous instability as a cause is mentioned by a large number of observers. Patients who suffer from simple spasm are usually highly strung and nervous, and the attacks may be precipitated by nervous



FIG 4 (Case 1)—Simple diffuse irregular spasm of the lower half of the oesophagus probably due to a phobia. This should be compared with Fig 14 in Knight's (1935) article which depicts a radiogram of a cat's oesophagus after bilateral removal of the stellate ganglia.



FIG 5 (Case 2)—Localised spasm of lower oesophagus of 31 years duration, probably due to a phobia. Radiogram shows a smooth stricture with "awl-shaped" end.

excitement, worry, anger or grief. Lust (1923) has recorded the occurrence of simple oesophageal spasm in children when presented with food which was distasteful to them. Moersch and Camp (1934) consider that nervous instability is more evident in these cases than it is in patients who suffer from achalasia. Spasm due to emotional disturbances corresponds to Abt's (1920) psychological oesophagismus and he has mentioned the theory of Lemaître that a small superficial abrasion of the oesophageal mucous membrane that would pass unnoticed in a normal person may give rise to spasm in an unduly receptive individual. Bruzzi and Alagna (1930) also consider such slight trauma to be a common causal factor.

Two cases of simple non sphincteric spasm apparently due entirely to a phobia were present in our series—

CASE 1—A female aged 35 stated that 7 weeks previously she thought a crust stuck in her throat and

since that date she had experienced difficulty and pain on swallowing. General clinical examination was negative. Radiography showed a diffuse irregular outline of the lower half of the oesophagus (Fig 4). Endoscopy revealed no lesion of the oesophagus, and the symptoms and abnormal radiological appearances disappeared after passage of the oesophagoscope.

It is interesting to note the similarity of the radiological appearances of this patient's oesophagus and that of Fig 124 in Knight's (1935) article which

only produced by deglutition and *not* by stimulation of the pharynx alone. In his opinion this type of spasm usually occurs in nervous females aged 18-30, and never below the upper third of the oesophagus. This subdivision should not include those cases in which a large, ill masticated and hurriedly swallowed bolus gives rise to a brief oesophageal spasm, as this is not a disorder of deglutition, but rather that the mass has acted as a temporarily impacted foreign body.



FIG 6 (Case 5) — Simple localised spasm of oesophagus observed accidentally in a patient with chronic gastric disease

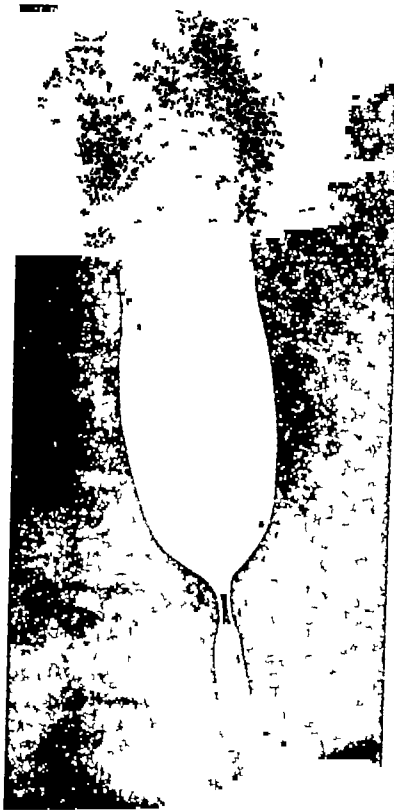


FIG 7 (Case 7) — Simple localised spasm of oesophagus of 2 days duration and unknown aetiology. The radiogram shows a smooth rounded outline of the stricture with atony of the upper portion of the oesophagus

depicts a cat's oesophagus after bilateral removal of the stellate ganglia.

CASE 2 — A female aged 53 stated that she had experienced pain and difficulty in swallowing for 3 months so that she could take only soft food, and that she thought she was "suffering from cancer." General clinical examination was negative. Radiography showed "definite spasm present at lower part of gullet." The blood Wassermann reaction was negative. Oesophagoscopy revealed a stricture with some associated oesophagitis of the lower third of the oesophagus (Fig 5). This was dilated without improvement in swallowing, and two years later as the lesion was considered to be neoplastic a Souttar's tube was inserted into the stricture and left in situ for a year. Six months after removal of the tube the dysphagia disappeared and radiography showed that the paste made a normal passage to the stomach. The patient has remained well for nine months.

Disorders of deglutition are suggested as a cause of spasm by Guisez (1923). He has stated that spasm "primitif" is nearly always due to trouble in the act of swallowing, since oesophageal peristalsis is

nervous lesion occurred in the present series —

CASE 3 — A male aged 8 months, suffering from primary amentia, was admitted to hospital with a history of attacks of screaming on and off for four months and regurgitation of feeds during the preceding two days. General clinical examination was negative. Radiography showed a complete hold up of the test paste in the oesophagus at the level of the 6th dorsal vertebra. Oesophagoscopy revealed no abnormality of the oesophagus save that the mucous membrane was redder than normal. The child died in spite of feeding by means of a stomach tube. Permission for an autopsy was not obtained.

Reflex stimulation from lesions of the thoracic and abdominal viscera has been regarded as a cause of simple non sphincteric spasm by numerous observers. The experimental results of Carlson and his co-workers (1922) have been mentioned above. Moersch and Camp (1934) record notes of a man who suffered from simple spasm for nine years, he was found to be suffering from a duodenal ulcer and the spasm was cured by performance of gastro enterostomy. Teschendorf (1925)

Organic disease of the central or peripheral nervous system is a probable cause of oesophageal spasm. It may occur in nervous disorders such as tabes, bulbar palsy, exophthalmic goitre, and in organic or toxic lesions of the oesophageal nerves. Mosher (1933, 1934) has shown that in acute and chronic general or abdominal infections and also in general degenerative conditions lymphatic permeation and fibrosis may occur in the lower part of the oesophagus, and Rake (1930) and other observers have demonstrated atrophy of the oesophageal nerve ganglia in cases of achalasia. Simple non sphincteric spasm associated with achalasia has been reported by Forbes (1926) and Teschendorf (1928), and Barsony and Polgar (1927) have watched the incidence of mega oesophagus in patients who previously exhibited functional diverticula. It is not difficult from the findings of the above observers to formulate a theory that the vagal nerve-endings may be irritated by toxic or degenerative products giving rise to spasm, they then recover or atrophic changes supervene leading to achalasia and mega oesophagus. One case of simple non sphincteric spasm due to an organic central

recounts the findings of several writers who have seen simple spasm of the oesophagus apparently caused by reflex stimulation from carcinoma of the stomach simple ulcer of the stomach and duodenum disease of the gall bladder movable kidney hernia and lesions of the uterus lung mediastinum and aorta. Three cases of simple non-sphincteric oesophageal spasm associated with gastro intestinal disease occurred in the present series —

CASE 4.—A female aged 45 gave in 1933 a history of four years intermittent difficulty and pain on swallowing. Radiography oesophagoscopy and biopsy showed a peptic ulcer of the oesophagus 13 in. from the incisor teeth. A few weeks later oesophagoscopy was repeated and the ulcer was then found to be healed by scar tissue. Since that date the patient has had attacks of complete oesophageal obstruction lasting two or three days and recurring three or four times a year although repeated oesophagoscopy has been negative in regard to any intrinsic lesion. It has been very difficult to persuade her to come to hospital during an attack of dysphagia. It was possible however to radiograph her during the most recent attack and the film which will not reproduce showed diffuse tetanic spasm of the lower third of the oesophagus. This patient is known to be suffering from a duodenal ulcer and the frequency of the spasmodic attacks has been lessened by the administration of large doses of alkalis.

CASE 5.—A male aged 52 gave a history of four years chronic gastritis and was found to have in addition complete achlorhydria and a microcytic anaemia. Routine radiography showed a simple oesophageal spasm (Fig. 6). Unfortunately the patient was not examined with the oesophagoscope but the subsequent disappearance of his symptoms following treatment and lack of recurrence over a long period is proof of the correctness of the diagnosis.

CASE 6.—A male aged 40 suffering from a duodenal ulcer was admitted to hospital under the care of Mr J. T. Morrison by whose kindness we examined the case. He complained of dysphagia and occasional pain in his left shoulder on and off for 12 months. Radiography showed a narrowing of distal third of oesophagus with dilatation above. Growth involving lower third of oesophagus. By oesophagoscopy no intrinsic lesion was found, but spasm of the lower part of the oesophagus was observed. He has been free from dysphagia since but nearly 5 years later he was readmitted for another complaint and radiograms showed some dilatation of the lower half of the oesophagus without any evidence of obstruction.

Other cases.—There is a residue of cases in which none of the above factors is evident but possibly this may be due to an incomplete clinical examination. The two following patients both exhibited simple spasm of the oesophagus without any other discernible lesion but in view of their ages there are many possibilities —

CASE 7.—A male aged 79 stated that he had been unable to swallow even fluids for two days. He gave a history of two similar attacks of dysphagia—15 years and 10 years previously. A radiogram by Dr P. H. Whitaker showed a complete smooth rounded hold up of food past in the lower third of the oesophagus (Fig. 7). Oesophagoscopy revealed no intrinsic lesion. He swallowed comfortably two days later and a further radiogram demonstrated a normal passage of opaque meal to the stomach.

CASE 8.—A female aged 77 was examined by the courtesy of Mr C. A. Wells. She complained of attacks of substernal pain which were relieved by vomiting mucus on and off for 7 years. She had not lost weight and her general health was good. Five weeks before examination she had vomited blood on four occasions. General clinical examination was negative. Radiography of the oesophagus by Dr Whitaker showed a pouch like appearance in its lower third. This was shown in a series of radio-grams (Fig. 8). A few days later she was admitted to

hospital when X ray examination showed no abnormality of the oesophagus and oesophagoscopy was negative. The patient has continued to suffer from attacks of pain and regurgitation at fortnightly intervals without any symptoms in the intervening periods.

SYMPTOMS AND SIGNS

Simple non sphincteric spasm may give rise to no symptoms whatever and it may be discovered accidentally as in Case 5 above. More commonly intermittent dysphagia and pain on swallowing are outstanding features, and the pain varies in character from a dull substernal ache to severe shooting paroxysms, which occasionally occur spontaneously and awaken the patient at night—in two cases reported by Moersch and Camp (1934) the pain was so severe that a diagnosis of angina had previously been made. In the present series the pain complained of was of the



FIG. 8 (Case 8).—Solitary functional diverticulum of the lower oesophagus.

dull aching variety. These symptoms may be accompanied by a feeling of anxiety and sometimes by palpitation and dyspnoea. Barony and Polgar (1927) state that functional diverticula may occur without symptoms and that patients who do experience pain and dysphagia have in addition some dilatation of the oesophagus. During the acute phase swallowed material is regurgitated and regurgitation is the predominant symptom of spasm in children.

RADIOLOGY

The routine examination of the oesophagus is made with the patient standing in the left posterior oblique position—that is in a semi lateral position with the left shoulder resting against the fluorescent screen—so that a clear space can be seen between the cardiac and aortic shadows anteriorly and that of the vertebral column posteriorly. The head is turned slightly towards the left shoulder and the chin raised to obtain a clear view of the pharynx. The patient is given a spoonful of opaque food of the consistency of very thick cream which is retained in the mouth until directions are given to swallow and the passage of the opaque bolus is then watched through the pharynx and oesophagus into the stomach. If no abnormality is detected the patient is questioned as to the exact character of the food which gives rise to dysphagia and the consistency of the opaque food should be altered or crumbs of toasted bread added and the examination repeated. For as Barclay (1931) has pointed out at one examination the opaque

food allays the irritation and no obstruction is observed, at the next a hard particle may set up the irritation and produce spasm." Radiograms are taken immediately after the screen examination and also with the patient standing in the right posterior oblique and anterior positions, as an abnormality may be demonstrated more clearly in either of the latter positions. When spasm is demonstrated it is advisable to repeat the examination later in the day, on the following day, or even at a still later date.

Many of the radiological features of simple non-sphincteric spasm have been mentioned in the text of this article but the following additional points may be noted—

(1) Spasm is best observed radioscopically because of its changing appearance.

(2) In diffuse and localised spasm the area above the hold up is everywhere smooth.

(3) The shadow of the paste above a localised spasm has usually a rounded end as in Fig 7, or occasionally an "awl-shaped" end as in Fig 5.

(4) With the patient supine and the hips raised it is possible in some cases to fill the portion of the œsophagus below the spasm with opaque material.

(5) Atony of the œsophagus may be associated with spasm. In Fig 7 an enlarged œsophageal shadow is shown which is due to atony and not to pressure dilatation, as the spasm had been present only for two days and the œsophagus showed normal radiological dimensions when the spasm had resolved, whereas Fig 5 shows no enlargement of the œsophageal shadow although the spasm had persisted for 3½ years.

(6) At other times there is a definite increase of tonus of the muscles, particularly in cases of diffuse spasm when the entire œsophageal shadow may appear as a narrow ribbon between the actual attacks.

TREATMENT

In many patients simple non-sphincteric spasm resolves spontaneously, whilst in others it persists in spite of active treatment, and a consideration of the many presumptive causes demonstrates the impossibility of generalisation in regard to treatment and affords an explanation of its failure in numerous cases.

All of the possible causative factors must be sought for in each patient, and if found the appropriate psychological, therapeutic, or surgical corrective measures can be adopted. The success of this approach to treatment is illustrated by the patient of Moersch and Camp (1934), who was cured after nine years suffering by gastro-enterostomy, Case 1 above in whom reassurance brought about resolution of the spasm, and Case 4, who is improving with massive doses of alkalis.

On the other hand a study of the case notes recorded above shows that symptomatic treatment alone is unsatisfactory—for instance the mere passage of an œsophagoscope or even actual dilatation will not bring about relief of spasm as it will do in the sphincteric regions. This fact also has been mentioned by Moersch and Camp (1934) and is illustrated by Case 2 above. As regards drugs, sedatives and antispasmodics do not appear to be of great assistance. Teschendorf (1928) advises large doses of atropine pushed almost to the limit of safety. Apomorphine has been given by Boehm (1921), and Lepameter and Dermas (1926) report resolution of symptoms after the administration of Sedobrol.

SUMMARY

Spasm arising in that portion of the œsophagus between the cricopharyngeus and the cardiac sphincter without any intrinsic œsophageal lesion is described as simple non-sphincteric spasm of the œsophagus.

The diagnosis of this is a dangerous one without the most careful investigation, as spasm of the œsophagus is common and may mask a grave lesion.

Simple non-sphincteric spasm may be localised or diffuse and includes the so-called functional diverticula, and it may be transient, intermittent, or persistent in character.

The radiological appearances are typical, and as a rule œsophagoscopy is negative.

It is a neurogenic manifestation and is often associated with other nervous manifestations such as general atony or increased tonus of the œsophageal muscles. Occasionally it may be followed by achalasia or mega-œsophagus.

This type of spasm appears to be secondary to disease or an altered state of other organs, and if it does not resolve spontaneously satisfactory relief can only be obtained by treating the primary lesion.

In addition to the acknowledgments made in the text our thanks are due to Dr R. Steel and Dr Swanson Hawks for the radiological reports in Cases 2 and 5 respectively, and to Dr T. J. O'Donnell for the after history of Case 8.

REFERENCES

- Abel, L. (1929) *Œsophageal Obstruction*. London p. 89.
 Alvarez, W. C. (1928) *The Mechanics of the Digestive Tract*. London, p. 27.
 Baldeuweck, L. (1925) *J. Laryng. (Abstr.)* 40, 141.
 Barclay, A. E. (1931) *The Digestive Tract*. Cambridge, p. 177.
 Barsony, T. and Polgar, F. (1927) *Fortschr. Röntgenstr.* 36, 593.
 Boehm, G. (1921) *Dtsch. Arch. klin. Med.* 136, 358.
 Bruzel, B. and Alagna, G. (1930) *J. Laryng. (Abstr.)* 45, 900.
 Cannon, W. B. (1907) *Amer. J. Physiol.* 19, 430.
 Carlson, A. J., Boyd, T. E. and Fearoy, J. F. (1922) *Arch. intern. Med.* 30, 499.
 Forbes, H. H. (1926) *J. Laryng.* 36, 190.
 Grogolre, R. (1920) *Arch. Mal. Appar. dig.* 16, 251.
 Guisnez, J. (1923) *Rétrécissements de l'œsophage et de la trachée*. Paris, p. 213.
 Jackson, C. and Jackson, C. L. (1934) *Bronchoscopy, Œsophagoscopy, and Gastroscopy*. Philadelphia 3rd ed. p. 345.
 Kelly, A. B. (1930) *J. Laryng.* 51, 89.
 Knight, G. C. (1935) *Brit. J. Surg.* 22, 165.
 Kohler, A. (1928) *Röntgenology*, London p. 379.
 Kuntz, A. (1929) *Autonomic Nervous System*. London, p. 188.
 Lepameter, A. and Dermas, S. (1926) *Bull. Soc. radiol. med.*, Paris 14, 169.
 Lust, F. (1923) *Masch. Kinderheilk.* 27, 9.
 Meltzer, S. J. (1908) *Amer. J. Physiol.* 2, 266.
 Moersch, H. J., and Camp, J. D. (1934) *Ann. Otol. & St. Louis.* 43, 1165.
 Mosher, H. P. (1933) *Arch. Otolaryng.* Chicago 18, 562.
 — (1934) *Ibid.* 43, 1102.
 Negus, V. E. (1936) *Proc. R. Soc. Med.* 29, 917.
 Rake, G. W. (1930) *Quart. J. Med.* 23, 491.
 Reynier, P. (1924) *Z. Kinderheilk.* 38, 492.
 Sudhues, M. (1932) *Arch. Kinderheilk.* 96, 65.
 Teschendorf, W. (1928) *Ergeb. med. Strahlenforsch.* 3, 175.
 Woollard, H. H. (1935) *Brit. J. Surg.* 23, 428.

URINARY SUPPRESSION FOLLOWING BLOOD TRANSFUSION

WITH REPORT ON A CASE PROBABLY DUE TO OVER HEATING THE BLOOD

By S. L. BAKER, M.Sc. M.Ch., Ph.D. Lond.,
M.R.C.S. Eng.

PROCTER PROFESSOR OF PATHOLOGY IN THE UNIVERSITY OF MANCHESTER

DEATH following and attributable to blood transfusion may occur immediately—i.e., within a few minutes or hours—or after an interval of several or many days. The causes of the rapid deaths usually remain doubtful and are difficult to investigate and to separate from the primary condition for which the transfusion was performed.

The delayed deaths are the result of complete or partial suppression of urine and examination of the kidneys shows that the tubules are plugged by blood pigment in the form of brownish granules and

mares; it is generally agreed that this condition is associated with an intravascular hemolysis of the donor's corpuscles due in nearly all cases to incompatibility between bloods of the donor and recipient. Blood grouping has greatly reduced though not entirely eliminated the chances of such incompatible transfusions.

In most cases in which the donor's and recipient's bloods have been re-examined after the occurrence of a hemolytic reaction they have been found to be incompatible. DeGowin and Baldridge (1934) however, report two cases of death with suppression of urine in which a re-test of the donor's and recipient's bloods showed no evidence of incompatibility. In one of these hemoglobinuria and the development of a definite jaundice left no doubt that intravascular hemolysis had occurred. Two cases out of seven reported by Goldring and Graef (1936) showed no evidence of incompatibility of the bloods on re-checking but presented undoubted evidence of hemolysis of the transfused corpuscles. In the first two of these cases citrated blood was used in the last two the transfusion was direct.

In cases where the transfusion is not direct one has to consider the possibility of some form of mishandling which would damage the red cells and either hemolyse them or render them liable to hemolysis in the recipient's circulation. Facey (1937) discussing reactions after blood transfusion stresses the possibility of faulty technique particularly in the case of inexperienced operators and mentions overheating as one of the errors. I have recently had sent to me sections of the kidney and an account of a case in which it appears probable that overheating was responsible for the hemolysis of the transfused blood.

A middle-aged woman was transfused for uterine hemorrhage. The donor was Group IV and his blood was matched against the recipient's and showed no incompatibility. 800 c.c. of citrated blood was used and this had been kept standing for nearly two hours in a receptacle with a water jacket the temperature of which was about 130° F. Within half an hour after transfusion catheterisation produced 25 c.c. of dark brown urine containing spherules of pigment and giving a strong Kastle-Meyer reaction for iron-containing hemoglobin derivatives. Spectroscopically it showed the bands of methemoglobin. The pigment gradually disappeared from the urine during the next two or three days but a nearly complete suppression of urine (2-3 oz. daily) had developed and the blood urea steadily rose reaching 540 mg. per 100 c.c. on the twelfth day after transfusion. The patient meanwhile became more drowsy with occasional vomiting but no jaundice and died on the fourteenth day after transfusion.

Post-mortem the kidneys (weighing 200 g. each) showed a deep purple red colour of the outer part of the cortex and a "very dark purple" medulla with streaks of deeper colour along the lines of the collecting tubules. The frozen section received proved not sufficiently good for fine details, but the most obvious lesion was a large amount of dark brown pigment in the lower convoluted and collecting tubules. The only other abnormality was oedema of the lower lobes of both lungs.

There seems no rational reason for heating blood for transfusion purposes above room temperature. As far as concerns the preservation of the blood this undergoes least change at low temperatures (5° C.). Blood kept outside the body at body heat (37° C.) deteriorates more rapidly than cool blood both as regards the condition of the red cells and as regards the various demonstrable antibodies in the plasma. As far as the cooling effect on the patient is concerned in rapid transfusion the blood is still warm from the donor and in slow transfusion unless special apparatus is used to heat the blood at a point close to the needle

it cools down to room temperature by the time it reaches the patient's vein. On making inquiries at Manchester Royal Infirmary I find that large numbers of slow transfusions have been given with complete success without any attempt to keep the blood warm. If for any reason it is necessary to keep the blood for any length of time before transfusing it is certainly undesirable to keep it warm during this period.

Cause of Suppression of Urine

Collections of brown granular pigment in the renal tubules are characteristic of suppression of urine following blood transfusion but they are also found in cases of intravascular hemolysis due to other causes particularly in blackwater fever where death from suppression of urine is not uncommon.

Yorke and Naus (1911) while investigating the pathogenesis of blackwater fever produced deposits of brown granular pigment in the renal tubules of rabbits by intravenous injections of solutions of hemoglobin. By this means they succeeded in producing suppression of urine in several animals, but found that this result could only be achieved if the animals were kept on a dry diet free from green food. Rabbits kept on an ordinary diet with green vegetables excreted the hemoglobin in an unchanged condition in the urine; no pigment was deposited in the tubules and no urinary suppression resulted. It appeared that the formation of the granular pigment in the renal tubules was related in some way to the condition of the urine, but the precise factors necessary for its deposition were first worked out by Baker and Dodds (1925).

We repeated and confirmed the findings of Yorke and Naus and further concluded that if hemoglobin is injected intravenously into rabbits it is excreted by the kidneys and reaches the renal tubules where one of two events may occur. (a) If the reaction of the urine be on the alkaline side of pH 6 the hemoglobin will be excreted unchanged and appear in the urine as oxyhemoglobin, the urine will be red and the kidney will take no harm. (b) If the reaction of the urine is as acid as pH 6 and if there is sufficient concentration of sodium chloride (over 1 per cent) the hemoglobin will be precipitated in the tubules as a brown granular pigment. The urine will then be brownish, will show a brown precipitate and will contain casts of the urinary tubules composed of similar brown granules massed together.

The kidneys of the rabbits secreting brown urine showed brown granular debris filling many of the renal tubules chiefly the collecting tubules. A certain proportion of these rabbits developed suppression of urine and became ill and showed an increase of blood urea (up to 300 mg. per 100 c.c.). Rabbits secreting the hemoglobin in an unchanged state as oxyhemoglobin never showed any evidence of renal damage.

On the strength of these animal and chemical studies and by the study of two human cases of suppression of urine following transfusion we concluded that the urinary suppression resulted from hemoglobinuria only when the urine was acid and we pointed out that the timely administration of alkali preferable intravenously should prevent this complication.

Both the cases we reported occurred unfortunately before we had worked out the problem and we have never had the opportunity of observing the effect of alkalinisation on a human subject. Since our paper was published in 1925 many cases of post transfusion suppression have been reported but in only very few of these can I find that alkalinisation has been

attempted and even in these it has obviously been tried much too late

Several writers on the subject have evidently failed to grasp the significance of our findings which have, unfortunately, not been generally applied to the prevention and treatment of this condition. Their significance has, however, been realised by two recent groups of workers, Goldring and Graef (1936) and DeGowin, Osterhagen, and Andersch (1937). The latter have repeated our experiments using dogs instead of rabbits and have confirmed the fact that animals secreting an alkaline urine suffer no renal damage while those secreting acid urine are liable to die from renal insufficiency produced by obstruction of the kidney tubules by pigment derived from hæmoglobin. They conclude their paper with the remark "These studies substantially confirm the experiments performed on rabbits by Baker and Dodds." It is satisfactory to find that our conclusions, based largely on studies of the rabbit, which normally secretes an alkaline urine, are equally applicable to the dog, which, like man, normally secretes acid urine.

ALTERNATIVE EXPLANATIONS

Before considering in more detail the mechanism of intrarenal obstruction it will be as well to discuss briefly some alternative explanations of the renal failure.

Bordley (1931) from a consideration of 17 cases, 14 of which were collected from the literature, concludes that there are four possible explanations of the renal damage:—

- (1) Mechanical blockage of the tubules by the granular debris
- (2) The kidneys are sensitive to certain bodies contained in the injected blood and the functional decline results from a local reaction which is of the nature of an anaphylactic shock
- (3) The immediate transfusion reaction brings about a metabolic disturbance that affects renal function
- (4) Damage to the renal tissue by toxic substances set free in the blood at the time of the transfusion

The last three of these possibilities cover a wide and indefinite field and the problem cannot profitably be discussed under these headings. It will be more to the point to consider first what part of the transfused blood is responsible for the renal damage.

(1) *Is it the plasma or the corpuscles?*—The answer to this is given by a case reported by DeGowin and Baldridge (1934) where hæmoglobinuria, jaundice, and a fatal suppression of urine followed transfusion with washed red corpuscles. This case and the experiments of Lorke and Nauss (1911) and Baker and Dodds (1925), in which suppression of urine in rabbits was produced by lysed washed red cells, prove definitely that the corpuscles are responsible for the damage.

(2) *What part of the corpuscles is responsible?*—The corpuscles can be separated into the hæmoglobin and the stroma and in our experiments on rabbits it was found necessary to remove the stroma by filtration in order to avoid capillary emboli and thrombosis in the lungs, which caused immediate death in these animals when whole lysed corpuscles were injected intravenously. In our experiments therefore urinary suppression and nitrogen retention was produced by the hæmoglobin fraction alone. We can say therefore that hæmoglobin liberated by intravascular hæmolysis of the transfused corpuscles is responsible for the renal damage.

(3) *Is hæmoglobin per se toxic to the kidneys or is the effect dependent from the formation of the granular*

precipitate in the tubules?—DeGowin and Baldridge (1934) quoting the experiments of Mason and Mann (1931) and Hesse and Filatov (1933) who showed that hæmoglobin had a vasoconstrictor effect on the kidney say "It is as yet not possible to say whether the vasoconstrictor effect or the blocking and destruction of tubular epithelium is the more important." It is clear that the idea that the suppression of urine is due to a vasoconstriction produced by hæmoglobin would not explain the fact that, in rabbits and dogs secreting an alkaline urine, hæmoglobin produces no signs of serious renal damage as judged by microscopic examination of the kidney and by the absence of nitrogen retention. Moreover of the 7 cases of post-transfusion suppression reported by Goldring and Graef (1936) 4 (Cases 2, 3, 5, and 7) developed a complete or partial suppression which lasted from seven to sixteen days, but was then followed by a diuresis and gradual recovery. Case 2 showed only a short period of hæmoglobinuria which had disappeared entirely by the fourth day following the transfusion, yet the non protein nitrogen of the blood continued to rise during a further seven days, after which diuresis set in and recovery took place. This would be a peculiarly persistent vasoconstrictor effect, especially in view of the fact that Mason and Mann describe the effect of hæmoglobin as "a definite, sharp, transient decrease in volume of the kidney." DeGowin, Osterhagen, and Andersch, in their (1937) paper quoted above, bring further evidence against the vasoconstriction hypothesis of Hesse and his co workers.

The outstanding fact which cannot be explained by any of the suggested alternatives but can be explained on our hypothesis is that under certain conditions a gross hæmoglobinuria may occur without any evidence of renal damage, whereas under other conditions the secretion of urine is suppressed.

Hæmoglobinuria without appreciable failure in renal function occurs in man in (1) paroxysmal hæmoglobinuria, (2) in blackwater fever, particularly in those cases treated with alkalis, and (3) after the experimental injections of hæmoglobin carried out by Sellards and Minot (1916). In animals Baylis (1920) found that injection hæmolyzed blood was innocuous to the cat and dog, and as already stated, rabbits with normally alkaline urine are not adversely affected by transfusion with filtered hæmoglobin solutions. On the other hand, we have the cases of post transfusion and blackwater fever suppression in man and the experimentally produced suppression in rabbits and in dogs secreting an acid urine.

THE AUTHOR'S VIEW

The following summarises what I believe to be the correct explanation of these apparently contradictory findings.

The urine is excreted from the glomeruli as a dilute transudate the reaction of which is in the region of that of the blood plasma. During its passage through the renal tubules it becomes more concentrated either by absorption of water or by the addition of salts. In hæmoglobinuria the hæmoglobin must either pass out in the glomerular transudate or it must be excreted by the tubules, in either case it will arrive in the lower convoluted tubules where the urine is becoming more concentrated. If the concentrated urine is sufficiently acid and has a sufficient salt content the hæmoglobin undergoes a change, first to methæmoglobin and then to hæmatin the latter forming a brown granular precipitate in the renal tubules. If the urine does not become sufficiently acid and

concentrated the hæmoglobin undergoes no change but is excreted in solution as oxyhæmoglobin in this event the kidney suffers no ill effects.

With a concentrated urine which precipitates the hæmoglobin there are three possibilities depending on the amount of hæmoglobin excreted and on the degree of concentration of the urine.

(1) With a considerable hæmoglobin excretion and a very concentrated urine there is a massive precipitate of hæmatin in the renal tubules. This packs down into masses which cause permanent blockage and death from complete or nearly complete suppression of urine.

(2) With either a small amount of hæmoglobin or a rather less concentrated urine the precipitate is less copious and produces a similar but less massive obstruction. With the gradual extrusion of the hæmatin casts, possibly encouraged by a diuresis produced by the raised blood urea the obstruction is relieved and the patient recovers.

(3) With still less hæmoglobin or only a moderately concentrated urine a light precipitate of hæmatin forms in the renal tubules. This is easily passed out and appears in the urine as lightly packed granular casts which are associated with a fair amount of brown granular precipitate formed in the bladder. No urinary suppression or gross functional damage to the kidney results in these circumstances. This condition was evidently present in the case of paroxysmal hæmoglobinuria whose urine we had the opportunity of examining (Baker and Dodds, 1926).

Recovery from Intrarenal Obstruction

In a series of 17 cases of post-transfusion suppression reported by Bordley (1931) there were 5 recoveries and in a recent series of 7 reported by Goldring and Graef (1936) 4 recovered. The mechanism of this recovery presents an interesting problem.

The sequence of events is usually as follows. After a period of partial suppression and steadily rising azotæmia with uræmic symptoms, lasting from seven to sixteen days the excretion of urine begins to improve and in the course of four to six days mounts steadily from an almost complete suppression to an output of 3-4 litres a day. With the establishment of this diuresis there starts a steady fall in the non-protein nitrogen of the blood and the patient makes a rapid recovery. Recovery may take place after a high grade of azotæmia has been reached. In Case 5 of the series reported by Goldring and Graef recovery occurred after sixteen days partial suppression with an azotæmia reaching 520 mg non-protein nitrogen per 100 c.c.m. The prolonged obstruction produced no permanent impairment of renal function in this case.

We noted a very similar recovery of renal function in our experiments on rabbits and made the following remark (Baker and Dodds 1925 p. 254).

When the urine is made acid it is not an easy matter permanently to obstruct the kidney of a rabbit by injections of hæmoglobin. Such an animal may recover after several 20 c.c. injections of strong hæmoglobin solution. There is no doubt that such injections lead to a temporary blockage of the renal tubules. It can be shown however that the kidney is capable of recovering its function after such an obstruction.

At the time of these experiments we were not aware that a similar process of recovery could take place in man and were surprised at the powers of recovery of our rabbits.

The evidence that recovery is dependent on the extrusion of the hæmatin casts from the renal tubules is based on the examination of the urine of rabbits recovering from obstruction. Our remarks on this were as follows—

"When obstruction has occurred in a rabbit with an acid urine an examination of samples of urine passed during the period of recovery shows numerous darkly coloured

compact casts which form a slight sediment in an otherwise perfectly clear urine. These casts undoubtedly correspond to the more compact masses of debris which are seen in sections blocking the straight tubules. Their extrusion no doubt frees the kidney to a considerable extent.

I have never had the opportunity of examining the urine of a patient who recovered from post-transfusion suppression, nor does there appear to be any record of studies of the urinary deposit in such a case.

Nature of Granular Precipitate in Renal Tubules

A detailed chemical study of the precipitate in the renal tubules and in the urine has as far as I am aware, never been made. It would obviously be very difficult to investigate in any detail the pigment in the tubules. It has however been shown that it gives a positive benzidine reaction (Goldring and Graef 1936) and that it does not give the Prussian blue reaction for inorganic iron. This proves that it is either hæmoglobin or one of its degradation products containing organically combined iron. Its brown colour and granular form tells us that it is not unchanged hæmoglobin. As regards the pigment in the urine part of which is derived from casts extruded from the kidney this consists of at least two substances for if the urine is allowed to settle the supernatant fluid gives the spectrum of methæmoglobin while the granular precipitate gives the reactions for hæmatin (Baker and Dodds 1925 p. 258). Hæmatin like the pigment in the renal tubules, gives the benzidine but not the Prussian blue reaction. These two pigments (methæmoglobin and hæmatin) were produced *in vitro* by adding hæmoglobin to acid urine.

The exact chemical composition of the precipitate is however of purely academic interest; what is of practical importance is the mechanism of its formation and this is set forth in detail in our paper. An important point which explains the different grades of renal obstruction (ranging from complete to nil) is the variation in the amount of precipitation with changes in the pH and salt content of the urine. With a very concentrated urine the precipitation is complete and relatively rapid and little if any methæmoglobin remains in solution; with less concentration its precipitation is slower and partial. With a fairly rapid and complete precipitation which would only occur with a very concentrated urine it is quite possible that no soluble pigment would escape from the kidney even though some urine was excreted. This probably explains the exceptional cases where hæmoglobinuria was definitely stated to be absent, although pigment was found in the renal tubules post mortem. Pigment casts would almost certainly have been found in the urine in these cases had they been looked for.

Although hæmolytic jaundice usually occurs it is not always present. Its absence even in carefully recorded cases cannot be taken to negative an intravascular hæmolytic process. This point is illustrated by the very well recorded series of 7 cases collected by Goldring and Graef (1936). All these showed hæmoglobinuria and all developed jaundice except Case 7 but there must have been hæmoglobinuria in this case to produce the hæmoglobinuria. If hæmoglobinuria without jaundice was also present in the case I report in this paper.

Changes in the Kidneys

The naked-eye appearance of the kidneys is variable and not very distinctive. They are usually enlarged

sometimes weighing up to about 8 oz each, the cortex is usually swollen and may show the pale opaque appearance of marked albuminous degeneration or, on the other hand, it may be congested. The medulla shows a dark red brown striated appearance produced in part by congestion of the vasa recta and in part by deposits of brown pigment in the medullary tubules. Microscopically the characteristic change is a deposit of granular brown pigment in the tubules, this is most obvious in the collecting tubules, but may in some cases extend as high as the second convoluted tubules (as in our Case 1, Baker and Dodds 1925). This pigment is in the form of granules of size varying from that of a micrococcus up to globules and masses considerably larger than red blood cells. In unstained sections it is brown in colour, but it appears red or brownish red with eosin staining and, as noted above, it gives a benzidine but not a Prussian blue reaction. The pigment is mixed with a variable amount of cell debris mainly derived from the tubular epithelium and tends to form compact casts in the lower parts of the tubular systems.

The other changes in the kidneys consist of (a) albuminous degeneration of the tubular epithelium, and (b) dilatation of the tubules and of Bowman's capsules. Oedema and infiltration of the interstitial tissues with chronic inflammatory cells have been described in several cases. The enlargement of the kidneys appears to be produced by albuminous degeneration and dilatation of the tubules and possibly to some extent by oedema and cellular infiltration of the interstitial tissues. The albuminous degeneration may be marked but there is no tubular necrosis nor are appreciable fatty changes present. The amount of dilatation of the tubules and of Bowman's capsules is very variable and possibly depends on the extent of the precipitate within them (and the point at which obstruction occurs). In our first case where the pigment precipitate extended as high as the second convoluted tubules there was a general dilatation of all the tubules and of Bowman's capsules, and I have sections of a kidney from a case of blackwater fever with urinary suppression which shows an almost identical condition. In Witts's case (1929), in which a detailed description of the microscopic appearances of the kidneys was given by Turnbull all the tubules were dilated, but the capsule of Bowman was "usually only slightly dilated". The deposit of pigment did not extend as high as the convoluted tubules in this case. In our second case there was no obvious dilatation of the tubules or of Bowman's capsules and the pigment was confined to the lower part of the tubular system.

Interstitial oedema and perivascular and inter tubular infiltration with chronic inflammatory cells, which were noted in Witts's case and in several others, if directly related to the renal obstruction, appear to be late results, neither of these features were present in our first case which died early on the fourth day following transfusion.

We may therefore summarise the more important microscopic findings as follows—

- (1) A precipitate of haematin in the lower parts of the tubular systems extending in some cases, into the second convoluted tubules.
- (2) Albuminous degeneration of the tubular epithelium without necrotic or fatty changes but with desquamation of some of the cells into the tubular lumina.
- (3) A variable degree of general dilatation of the tubular systems which may be marked and may also involve Bowman's capsules.

(4) No signs of inflammatory or other significant lesions in the glomeruli.

(5) As a late result a varying amount of oedema and, possibly, chronic inflammatory infiltration of the perivascular and intertubular connective tissues.

Prevention and Treatment of Post-transfusion Suppression

Since haemoglobin is precipitated only when the urine is acid intrarenal obstruction will not occur in a patient whose urine is neutral or alkaline during the period of haemoglobinuria following an incompatible blood transfusion. If, however, a precipitate has formed in the renal tubules in a patient with an acid urine it is doubtful whether alkalinisation will effect a cure. Precipitates of haematin are not very soluble in alkaline urine (pH 7.5) but they are more soluble in this than in acid urine. When the precipitate is sufficiently massive to produce complete suppression one can, presumably, expect little from alkalinisation, but in most cases the suppression is not complete and an alkaline urine should help by dissolving some of the precipitate in the tubules. Since, as we have seen, a fair proportion of cases have recovered from the obstruction spontaneously, probably by the extrusion of the obstructing casts, a relatively slight solution of some of the pigment may well turn the scale in favour of recovery. Early recognition and prompt treatment of the condition by alkalinisation appears to offer the best prospect of recovery. The treatment of blackwater fever by alkalis has been practised for many years.

Cases must occur in which an incompatible transfusion results in haemoglobinuria, but, because the patient's urine is not very acid, there is no suppression of urine. I have heard of one such case, but the majority have evidently not been considered worth recording.

SUMMARY

1 A case is described in which urinary suppression followed transfusion with overheated blood.

2 The mechanism of post transfusion suppression is discussed in the light of older and more recent work and it is concluded that the view put forward by Baker and Dodds (1925) furnishes the only adequate explanation of the observed facts.

3 According to this view the urinary suppression results from an intrarenal obstruction due to excretion of haemoglobin with a urine of high acidity and salt concentration. Under these conditions the excreted haemoglobin is converted into a granular deposit of haematin which obstructs the renal tubules. Haemoglobin per se is innocuous to the kidney.

4 The prevention and treatment of the condition is briefly considered.

REFERENCES

- Baker S L and Dodds, E C (1925) *Brit J exp Path* 6 24.
 Bayliss, W M (1920) *Ibid* 1 1.
 Bordley J (1931) *Arch intern Med* 47 258.
 DeGowin E L and Baldrige C W (1931) *Amer J med Sci* 188 555.
 — Osterhagen H F and Andersch M *Arch intern Med* March, 1937 p 432.
 Facer R V (1937) *Brit med J* 1 40.
 Goldring W and Graef I (1936) *Arch intern Med* 58 825.
 Heese E and Flatau A (1933) *Z ges exp Med* 86 211.
 Mason J B and Mann, F C (1931) *Amer J Physiol* 98, 181.
 Witts L J (1929) *Lancet* 1 1297.
 Yorke W and Nauss R W (1911) *Ann trop Med Parasit* 5 287.

HOSPITAL'S CHANGE OF NAME.—The City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, has been renamed the London Chest Hospital.

TRANSPLANTATION OF THE CORNEA FROM PRESERVED CADAVERS' EYES

By V. P. FILATOV M.D.

OF ODESSA, U.S.S.R.

TILL recently the chief source of material for the transplantation of the cornea in man consisted of eyes enucleated from living people owing to some disease of the eye or of the orbit. The possibility of obtaining a permanent transparent union of the corneal graft from the living eye has been proved beyond any doubt many cases have been recorded where the transparency of the cornea has been observed for nine months or more—notably 31 cases from Eieschnig's clinic (Ascher 1919 1922 Liebesch 1930 Stanka 1927) 16 from my own observation (Filatov 1935b) and the cases of Zirm (1907) Plange (1912) Löhlein (1912) Tudor Thomas (1933 1934) Castroviejo (1933 1934 1935) Vasutinsky (1935) Belajev (1924) and other authors. About 70 cases are on record of successful transplantation of the cornea from living eyes. Almost all of these successes have been obtained with the method of partial penetrating transplantation in a few of the cases the lamellar partial transplantation was made while one only fairly successful case has been recorded (Schumanovsky 1913) of complete transplantation.

All my cases were under observation for not less than a year the only exception being a patient who died seven and a half months after the operation. As regards more remote results of transplantation from the living eye a number of cases have been recorded by Eieschnig as well as by myself which have been under observation for several years. Fig. 1 shows eyes whose transplants were found to be transparent after varying periods.

GRAFTS FROM THE LIVING

CASE A—Complete leukaemia, developed after recurring scrofulous keratitis. In the leukaemia some remnants of the semi-transparent corneal tissue. Vision before operation (Oct 18th, 1923) was equivalent to perception of light vision after operation was 3/80 on aphakic correction. This vision remained unchanged till the patient died 6 years later (Filatov 1923).

CASE B—Dense opacity after parenchymatous keratitis. Vision before operation (Dec 23rd 1930) 0-025. The transplant retained a fine transparency during the time of observation (5½ years). Vision after the operation was 0.7 till May 1934 when it became and remained 0.4. Fundus oculi clearly visible (Filatov and Velter 1934) (Fig. 1).

CASE C—Dense opacity of the central part of the cornea of the right eye and less dense opacity on its periphery both developed after parenchymatous keratitis. Vision before the operation (Feb 2nd 1932) was 3/60. The transplant is now 4 years and 7 months after the operation still fully transparent. Vision was 0.5 (Filatov and Velter 1934) (Fig. 1).

CASE D—Opacity developed in the left eye after parenchymatous keratitis. Vision before the operation (March 10th 1932) was 5/60. The transplant is now 4½ years after the operation fully transparent. Vision=0.3 (Filatov and Velter 1934).

CASE E—Leukaemia developed after a traumatic ulcer. In the upper third of the cornea a strip of the tissue is transparent. Vision before the operation 1/80; after the operation performed in December 1931 by Prof. Zykulenko vision rose to 0.4. Binocular vision was restored. Length of observation time 4 years 9 months (Zykulenko and Velter 1933) (Fig. 1).

These results illustrate the bright prospects of corneal grafting and there is now reason to think that the operation may prove to be a practical means of overcoming the blindness and disablement due to leukaemia.

NEED FOR NEW SOURCES

The question now arose whether the number of suitable eyes removed from living people would be enough for all the cases in which the transplantation was indicated. For it must be kept in mind that there are six million blind in the world and fifteen millions suffering from diseases of the eye (Samoulov and Braunstein 1936). According to the official census in 1928 there were 234 800 blind people in the Soviet Union (Savvatov 1932). In at least 43 per cent. of this number blindness is due to leukaemia for to this cause may be put down all cases of blindness from trachoma (20-64 per cent.) from small pox (10-63 per cent.) from diseases of the cornea (8-43 per cent.) and from blennorrhoea of the newly born (3-45 per cent.) it is also necessary to add some cases of blindness due to trauma. Of this number—about a hundred thousand—a great many cases are not fit for the operation of corneal transplantation owing to various complications, such as glaucoma atrophy of the eye staphylocoma symblepharon and persisting trachoma. Yet the number of cases in which the operation is indicated still amounts to many thousands. The number of candidates for corneal transplantation would be increased even more by those who though afflicted with leukaemia in both eyes, have not been registered as being blind because their vision is above 1/200. Such cases lend themselves particularly well to the operation of corneal transplantation for these leukaemata contain remnants of corneal tissue. Furthermore, since the transplantation of the cornea successfully competes with iridectomy the number of candidates for the operation may indeed be enormous.

In view of the great success already achieved in the work with corneal transplantation it seemed high time to attempt to find a new source of transparent corneas. If the serious difficulty of supply was to be overcome. It was only natural for me first of all to turn my attention to the dead body. For some time cadavers eyes from adults as well as from foetuses, had been employed in a few single cases by several surgeons. Some used corneas immediately or during the first hours after death (Fuchs 1901 Schumanovsky 1913, Magitot 1912 Savellier 1927). Other surgeons removed the eyes from the stillborn 10-36 hours after death. Only in the case reported by Magitot (1912) however was a permanently transparent union of the transplant established by fairly long observation. These data were of course far too meagre and the use of cadavers material on a large scale as a substitute for living material, to meet the demands for transplantation had not previously been considered by anybody.

This then was the state of affairs when I studied the problem in 1931. Its solution I based on the remarkable case reported by Morax and Magitot (1912) who obtained a permanently transparent union of the cornea removed from a living person and preserved in the donor's blood at a temperature of minus 6 C for eight days.

METHOD

From the very beginning of my investigation on the feasibility of transplanting cadaver cornea I employed corneas taken from cadaver eyes preserved for many hours before the operation at a relatively

low temperature The eyes were obtained (1) from bodies of those who had not died from infectious diseases nor malignant tumours—syphilis was excluded by serological tests before or after death and sometimes also by autopsy, (2) after death from accidents or suicide, brought into the medico judicial morgue—syphilis was excluded by serological tests, and the absence of acute infections by the anamnesis and sometimes by autopsy

The enucleated eyes were in some cases placed in a sterile jar with a tight fitting stopper, cornea upwards, sometimes the jar was filled with the donors fresh clotted blood while in still other cases the blood was citrated The jars were kept in an ice chest at 4° – 6° C On the day of operation the jar containing the eye, surrounded by ice, was brought into the operation room, where it remained for about an hour before the cornea was excised and transplanted The corneas of eyes preserved in this manner usually appeared to be somewhat dimmed, the epithelium being slightly stippled The eyes were kept for periods varying from 10–56 hours, while in one case it was six days Before excising the transplant the cornea was washed with a fresh aqueous solution, brilliant green (1 1000)

RESULTS

From 1932 till January, 1936, I have performed 95 operations of the partial penetrating transplantation of corneas prepared in this way (Filatov 1934, 1935a) In nearly all of these cases I used my own operative technique

I employed either an FM 1 or an FM 3 trephine and covered the transplant with a flap of conjunctiva (Filatov 1934a and b, 1935b and c)

tissue film had formed on the posterior surface of the transplant, must not be referred to the total number of eyes operated on, but only to 49 of them, since in 46 eyes the leukomata were greatly complicated by glaucoma, buphthalmos, apphation, subatroph of the eye, &c, in such eyes there is no hope at all of obtaining a transparent union While the operation is performed in the last resort as a concession to the supplications of the patients, it is necessary to keep separate records for such eyes

Out of the 18 operations in which transparent union was recorded, 14 cases have been under observa-

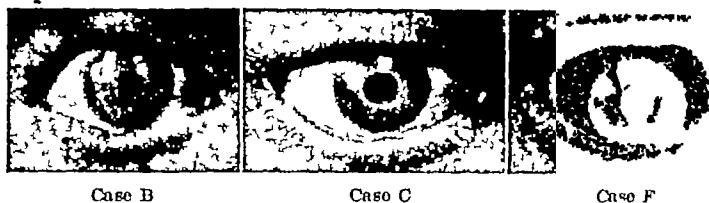


FIG 1—Corneal grafts from the living

tion for over nine months, the remaining 4 cases having been followed up for a shorter time Some of these 18 cases of transparent union are summarised below and illustrated by untouched photographs—

CASE 1*—Leukoma due to scrofulous keratitis Vision before operation perception of hand movements Transplantation of cadaver's cornea on March 17th, 1935 The eye had been taken from the cadaver 12 hours after death and subsequently preserved for a further 25 hours at 4° – 6° C

Result—Vision = 3/60, on eccentric fixation (amblyopia) Fundus oculi clearly visible Length of observation (Oct 1st, 1936) 1½ years (Fig 2)

CASE 2*—Leukoma developed after an ulcer Vision perception of hand movements Transplantation of



FIG 2—Corneal grafts from cadavers The eyelids are retracted to display the cornea

There was not a single case of necrosis of the transplant The post operative course was pretty much the same as in transplantation from living eyes

The following were the results of the 95 operations

There were 46 cases of non transparent union and 17 cases of half transparent union In one of these cases a greyish film has formed on the posterior surface of the transplant

In 4 cases, in one of which the transplantation was performed after six days' preservation of the eye, the union was transparent but a connective tissue film had formed in each case on the posterior surface of the transplant

Lastly there were 18 cases of transparent union By this I mean that the details of the anterior chamber could be clearly made out at least through a part of the transplant or that there was a good light reflex through it

The 18 cases of transparent union and also those cases of transparent union in which a connective

cadaver's cornea on Dec 12th 1935 The eye taken from the cadaver had been preserved for 27 hours

Result—Vision = 0.4 Fundus oculi clearly visible Anterior pole cataract distinctly visible Length of observation (Nov 1st, 1936) 10½ months (Fig 2)

CASE 3—Leukoma formed after a thermic burn Vision before the operation perception of hand movements Transplantation of cadaver's cornea on Oct 28th, 1934 The eye had been removed from the cadaver 3 hours after death and subsequently preserved for 27 hours

Result—Vision = 0.4 Anterior pole cataract Fundus oculi clearly visible Length of observation (Nov 1st, 1936) 2 years (Fig 2)

CASE 4—Aged 12 Leukoma after parenchymatous keratitis Vision before the operation able to count fingers held before her face The eye had been taken from a cadaver 12 hours after death and subsequently preserved for 26 hours

* Cases 1, 2 and 5 were demonstrated at the All Union Meeting of Ophthalmologists of the U.S.S.R. in June, 1936

Result—Vision = 0.1 with a -0 D lens. Fundus oculi distinctly visible. Period of observation (Oct 1st 1936) 2½ years (Fig 2).

CASE 5—Leukoma after parenchymatous keratitis. Vision before the operation = 0.02. Transplantation of cadaver's cornea on Oct 28th 1936. Eye removed from the cadaver 2 hours after death preserved a further 28 hours.

Result—Vision = 0.0. Length of observation (Nov 1st 1936) 1½ months.

The cases cited above bear witness to the fact that a cornea from a cadaver's eye preserved at a temperature of 4–6 C is perfectly suitable for transplantation. Analysing my material and taking into account the quality of the leukomatous substratum in which the transplant from the cadaver is placed I have gained the impression that the results of transplantation from cadaver's eyes are not inferior to those obtained with grafts from living eyes. For a final opinion it is of course still necessary to follow up the more remote results of the operations. On the other hand it may be said that the present results in my series of cases that have been under observation from 1½ to 2½ years, would already seem to justify the expectation that the more remote results will be favourable.

Investigations are being made in my laboratory on the retention of vitality by the cornea under various conditions of preservation. Experiments carried on by Dr Bashenova have shown that the cornea of rabbits' eyes may show a good tissue growth when planted in vitro even after ten days' preservation at a temperature of 2 C. In collaboration with Bashenova I have obtained a tissue culture from dried cornea. Working in my laboratory Velter has shown in rabbits the possibility of transparent union of the cornea taken from eyes preserved at a temperature of +2 C. for as long as fifteen days. My pupil Dr Popenko has brought forth evidence for migration of cells and their formation into clusters in the cornea (and in other tissues) after preservation of the material for eight days at a temperature of 2 C.

CONCLUSIONS

The cornea from eyes of human cadavers, removed some hours after death and preserved at a temperature of 4–6 C is suitable for homoplastic transplantation in man the transplant retaining permanent transparency after union with the substratum.

The new source of material for transplantation opens up great possibilities for further investigations on corneal grafting.

In connexion with the transfusion of preserved cadavers' blood first applied to dogs by Prof W N Shamov and to man by Prof. Yudin the successful transplantation of preserved cadavers' cornea is of great interest not only from a clinical but also from a general biological point of view.

REFERENCES

- Archer (1910) *c. Graefes Arch. Ophthalm.* 99 339
 (1923) *Ibid.* 107 311 and 439
 Belsky (1924) *Med. J. N. Y.* 1924, 3 52
 Castroviejo, R. (1935) *Am. J. Ophthalm.* 15 835
 — (1931) *Ibid.* 17, 939
 (1935) *J. med. Soc. N. Y.* 32 80
 Filatov, V. I. (19 5) *Klin. Jid. Imen. 74* 110
 — (1927) *Ibid.* 78 217
 — (1921a) *Sovetsk. revnitsk. oftal.* 4 2
 (1931b) *Arch. Oftal. (U.S.S.R.)* 1mer 34 289
 (1931) *Ann. Oculist.* 17 1
 — and Velter, T. (1933) *Arch. Augenheilk.* 106 177
 — (1931) *Sovetsk. revnitsk. oftal.* 4 5
 (1935a) *J. med. Acad. S. (Krasn.)* 4, 11 1
 (1935b) *Arch. Ophthalm.* 15 12 27
 — (1935c) *Klin. Jid. Imen. 74* 96 56
 Fuchs, A. (1901) *Z. Augenheilk.* 5 1

(Continued at foot of next column)

EFFECT OF CALCIUM AND VITAMINS A AND D ON INCIDENCE OF PREGNANCY TOXAEMIA

By G W THEOBALD M.D. Camb. M.R.C.P. Lond.
F.R.C.S. Edin. F.C.O.G.

THE following experiment, carried out at St Mary Abbots Hospital,* London during 1936 was devised to determine whether the mere addition of calcium and vitamins A and D to the diet of patients attending the antenatal clinic would have any effect on the incidence of toxæmic symptoms.

Apparently healthy women not more than twenty four weeks pregnant were divided by the sister into two groups when they first attended at the clinic, no attention being paid to their previous obstetric histories. They were divided at random in the following manner—

An equal number of blue and white beads were placed in a box. Each woman accepted for the experiment was asked to draw a bead from the box. Those who drew blue beads were placed in Group A while those who drew white beads were placed in Group B. The beads drawn out were placed in a separate container.

The patients in Group A were requested to take daily, for the remainder of their pregnancies, calcium lactate 20 grains, vitamin A (11 000 international units) and naturally occurring vitamin D (450 units); while those in Group B served as controls. The oil containing the vitamins was supplied in capsules of which four were to be taken every day while the calcium lactate was distributed in the form of tablets. No advice concerning diet was given to either group of patients.

Each group contained 50 women. In Group A 25 and in Group B 26 were primigravidae. The symptoms were recorded by independent antenatal officers who had no knowledge as to which patients were receiving the additional substances. All patients developing albuminuria, showing hypertension or suffering from excessive vomiting or oedema were admitted into the antenatal ward. Those suffering from insomnia or severe headaches were also advised to go into hospital.

RESULTS

The results obtained are shown in Tables I and II. The symptoms of the patients admitted for albuminuria and hypertension are not included, so that the heading symptoms refers to patients

This obstetric unit is affiliated to the British Postgraduate Medical School, Hammersmith, London.

(References continued from previous column)

- Komarovich (1930) *Prav. oftal.* 12 227
 Lieberh, W. (1930) *Arch. Augenheilk.* 103 603
 Lohlein (1931) *Arch. Ophthalm.* 14 3
 Martini, A. (1914) *Arch. Ophthalm.* 33 173.
 — (1912b) *Ann. Ocul.* 147 44
 — (1917c) *J. Amer. med. Ass.* 59 18
 Piacere (1917) *Klin. Jid. Imen. 74* 89 18
 Pasmoloff and Braunstein (1935) *Krasn. Himnologia* 1 4 1
 Savatkov (1933) *Sovetsk. revnitsk. oftal.* 1 1
 Savelier (1921) *Russk. oftal.* 3 8 278
 Schimanovsky (1931) *Oftal. revnitsk.* 24 711
 Stankin, R. (1917) *Prav. oftal.* 10 118 33
 Thomas, J. W. T. (1933) *Proc. Roy. Soc. Med.* 26 2
 — (1931) *Med. J. Ophthalm.* 1 18 121
 Wasthlin, L. A. G. (1935) *Sovetsk. revnitsk. oftal.* 6 22
 Ziem, E. (1907) *Mon. Klin. Jid. Imen. 74* 81
 Zykunov, S. and Velter, T. (1933) *Klin. Jid. Imen. 74* 96 56

not included in the above two categories. A systolic blood pressure of, or exceeding, 140 mm. Hg was considered evidence of hypertension. The numbers

TABLE I

Incidence of Toxic Symptoms in Treated (A) and Untreated (B) Women

	GROUP A (50)		GROUP B (50)	
	Cases	Primigravidae	Cases	Primigravidae
Albuminuria and hypertension	2	1	3	2
Hypertension	3	1	8	4
Albuminuria	2	2	6	3
Other symptoms	6	2	11	4
Totals	13	6	28	13

TABLE II

Analysis of "Other Symptoms"

	Group A	Group B
Hyperemesis	2	4
Oedema	3	3
Headaches	2	5
Cramps	1	3
Insomnia	2	6
Totals	10	21

suffering from "other symptoms" are shown in Table II, most patients complaining of more than one symptom.

COMMENT ON THE FINDINGS

Prof L. S. Pearson, of the department of statistics at University College, London, has been kind enough to study these figures and has expressed the opinion that the difference in incidence of "complications" between the two groups is very unlikely to have arisen by chance. It is therefore desirable to consider factors, other than the diet, which may have contributed to this difference.

Of the 100 patients, 76 were between twenty and thirty years of age. Of the primigravidae 4 (2 in each group) were under the age of twenty, each being nineteen years of age. The number of women over thirty was 20, including 2 primigravidae in each group. 9 of these were in Group A and 11 in Group B. It is thus evident that the ages of the women in the two groups were strictly comparable.

It has already been stated that no regard was paid to the previous obstetric histories of the multigravidae. There are arguments in favour of confining future experiments to primigravidae, but it would have been impossible to take previous obstetric histories into consideration unless all the confinements had taken place in comparable institutions. One woman in Group A, admitted for albuminuria and hypertension, had been twice previously confined—on both occasions in St. Mary Abbots Hospital. In her first pregnancy she had suffered from eclampsia and during her second pregnancy she was admitted for albuminuria and hypertension. As the result of treatment in the ward her urine became protein free and her blood pressure returned to normal limits before she was delivered of her third child. The previous obstetric

histories of many of the patients were unobtainable, but it is significant that the same difference in incidence of "complications" between the two groups is observed among the primigravidae as among the multigravidae.

All the patients in the experiment were observed equally often over approximately the same period of time. No woman was included who was not in the position to take the "protective substances" for sixteen weeks before delivery, and no one took them for more than twenty weeks. The social status of all the patients was, so far as could be judged, strictly similar. There was no room for variation in the "standards" adopted by the antenatal officers, for the criteria were well defined. If albumin was found in the urine a catheter specimen was subsequently obtained and tested. No patient was recorded as suffering from albuminuria unless albumin was detected in a catheter specimen. Similarly, no patient was admitted for hypertension unless, after rest, the systolic pressure equalled or exceeded 140 mm. Hg. A symptom, such as headache, was accepted only if it persisted and was severe. Moreover, I myself saw every patient who was admitted to the antenatal ward and confirmed the findings of the antenatal officers.

It therefore seems logical to assume that the difference in the incidence of "complications" between the two groups must, if not due to chance, be attributed to the substances given. This assumption is strengthened by the results of the dietetic treatment of these patients in the antenatal ward. The symptoms cleared up in every case. A slight degree of albuminuria, not exceeding 0.05 per cent, persisted in 3 of the 13 patients admitted for this condition, while the blood pressure returned to the normal in 13 of the 16 patients admitted for hypertension. These results strongly suggest that the other main factor in the prevention of the toxæmias of pregnancy is the vitamin B complex.

It is somewhat disappointing that, after waiting so long for the opportunity of conducting this experiment, the number of women included should be so small. This is due to the fact that only a small proportion of the patients booked sufficiently early and attended the hospital antenatal clinic throughout their pregnancies. These results, however, point in the same direction as those obtained by Mendenhall and Drake,¹ and are published in the hope that further experiments on a larger scale will be conducted elsewhere. There is no proof that all the patients in Group A took their capsules and tablets regularly, and it might be expedient to incorporate a trace of methylene blue in each tablet.

Experiments conducted on these lines would show to what degree, if any, the different protective substances are associated with toxæmic symptoms. It is my belief, for instance, that vitamin A is of more importance in preventing senile changes in the placenta, and consequent death of the fetus, than in preventing toxæmic symptoms. Then too, experiments conducted in different parts of the country might show that the degree of deficiency of any given protective substance varied from area to area. On the other hand, all the protective substances could be incorporated in a pill and a capsule and be distributed at a cost not greatly exceeding that of a daily pint of milk.

There is one further and still more important reason why such investigations should be under-

¹ Mendenhall A. M. and Drake J. C. (1934) *Amer. J. Obstet. Gynec.* 27: 890.

taken. Some authorities maintain that the great majority of the adult population suffers from some degree of malnutrition, while others deny that there is any evidence other than an incidence of secondary anaemia in favour of such a conclusion. Dietetic surveys indicate that the average intake of the protective substances is inadequate when calculated on a rat basis but the transference of results from the rat to man is not justified and it must be admitted that the optimum and minimum human requirements of these substances are not known. It is however universally accepted that pregnancy makes an increased demand on the maternal stores of the vitamins and minerals, and this is true of every experimental animal. If therefore neither the toxæmia of pregnancy nor intra uterine death of the foetus are to be attributed to dietetic deficiencies then it may be asserted that there is no evidence whatsoever that any significant section of the adult population suffers from malnutrition. Conversely

if the toxæmia of pregnancy are due to this cause then there is every justification for the assumption that similar symptoms and diseases, such as insomnia, headaches, cramps, pyælia, albuminuria, hypertension, skin rashes and jaundice occurring in the non-pregnant state, may likewise be due to dietetic deficiencies. It may with reason be concluded that the proof or disproof of the dietetic deficiency hypothesis of the toxæmia of pregnancy affords the only available experimental means of determining whether malnutrition other than iron deficiency is a significant cause of ill health and diminished vitality in the adult population of this country.

I have pleasure in thanking Sir Frederick Menzies, medical officer of the County of London for permission to carry out this experiment and to publish the results. I should also like to take this opportunity of thanking Miss F. R. Slendon, the maternity sister for so willingly undertaking the extra work necessitated by this investigation.

CLINICAL AND LABORATORY NOTES

INTUBATION OF THE MAXILLARY ANTRUM FOR ACUTE EMPYEMA

By N. ASHERSON, M.B. Lond., F.R.C.S. Eng.

ASSISTANT SURGEON TO THE CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL.

PUNCTURE with subsequent lavage of the maxillary antrum through the inferior meatus is a common way of dealing with an acute empyema of the antrum for both diagnosis and therapeutic. Antral puncture is especially indicated when after a cold or influenza the antral infection gives rise (as it frequently does) to severe face ache, facial neuralgia or supra orbital neuralgia. This underlying acute sinusitis is a condition which is more frequently overlooked (except by rhinologists) than any other disease.

When the presence of an empyema of the antrum is confirmed by the lavage it may be necessary to repeat the puncture and lavage on subsequent occasions. Patients shrink from this repeated puncture under local anaesthesia and consequently I always (where possible) perform antral puncture under a short nitrous oxide and oxygen anaesthesia. The patient is permitted to regain complete consciousness before the lavage is commenced.

Antral drainage (antrostomy) is called for the case that fails to respond to repeated antral puncture and lavage. This operation is not devoid of complication of which the most frequent are otitis media and acute streptococcal meningitis.

METHOD

Repeated antral punctures and even an antrostomy can be avoided by the following procedure which I term intubation of the antrum.

The intubation cannula (see Figure) is short straight and of wide bore. The flange is perforated by a slot on each side to which a strong thread is applied. The cannula is of such a length that when it is inserted into the antrum the flange lies just outside the nose, flush

with the upper lip. It is retained in situ by strapping the threads to the cheeks.

Using this special retainable antrum cannula the antrum is punctured with the trocar and cannula through the inferior meatus. The trocar is withdrawn and the cannula left in situ. The antrum is perfused with saline. A loose pad of gauze is also strapped over the nose.

The patient is confined indoors or to bed, and every 3 hours the first day every 4 hours the next day and subsequently three times daily the antrum is irrigated about a pint of sterile tepid saline being used. The cannula is left in for up to a week, when it is withdrawn, cleaned, sterilised and reinserted.

Should the ostium of the maxillary antrum be blocked—as shown by an inability to perfuse the antrum—the cannula should be left in situ for 24 hours and the lavage again attempted. Sooner

or later this becomes possible as in Case 2.

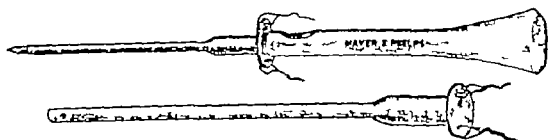
ILLUSTRATIVE CASES

I originally devised intubation for use in the first of the following cases where a plastic operation on the cheek on the same side as the empyema of the antrum was contemplated. A pedicle graft from the abdomen had already been grafted on to the forearm preliminary to transplanting it on to the cheek to cover a scarred area left after the treatment of an extensive facial nevus.

CASE 1.—Acute empyema of antrum cured by intubation of the antrum.

A girl of 20 complained of a right nasal discharge with severe pain over the antrum due to an acute empyema of the antrum. An enormous amount of stinking pus was removed by antral lavage following the antral puncture. The cannula was left in situ and antral lavage was then performed every four hours during the day for two weeks, the cannula being changed every five days. For the first 10 days pus was irrigated from the antrum but within 3 weeks the infection cleared up completely.

The cannula is made to my design by Messrs. Mayer and Phelps, London.



Above The intubation trocar and cannula

Below The cannula alone (natural size)

It was necessary in this case (a) to get rid of the antral infection rapidly, in view of the imminent grafting of the pedicle flap from the arm to the face, (b) a Caldwell-Luc operation was not possible as encroaching on the plastic surgeon's field, (c) intra-nasal antrostomy would not have obviated the necessity for repeated antral lavage apart from carrying the risk of an acute otitis media or streptococcal tonsillitis.

CASE 2—Acute exacerbation of a chronic antral infection treated by intubation of the antrum.

A man of 42 developed an acute infection of the left antrum followed by an acute otitis media. Transillumination and radiography revealed an opaque antrum. On puncture of the antrum no fluid or air could be perfused owing to the ostium being blocked. The cannula was left in situ for 24 hours after which antral lavage was easily accomplished, the ostium having become patent with the relief of the tension in the antrum through the intubation tube.

SUMMARY

Intubation has the advantage of giving that continued antrum drainage which is otherwise only obtainable by an operation, avoids any complications of the latter, does not incapacitate the patient to any extent, and its application in suitable cases will prevent the condition from becoming chronic.

HÆMOGLOBINURIA FOLLOWING EXERTION

By W. H. W. ATTLEE, M.D. Camb., M.R.C.P. Lond.
Physician to King Edward VII Hospital Windsor.

THE association of hæmoglobinuria with exertion is well recognised. In Germany it has been described under the name *Marschhæmoglobinurie* and in America very full notes of a case have been given by Watson and Fischer (1935). MacManus in this country in 1916 reported three cases in army recruits, and Wits in 1936 published notes of two cases. In all of them, with the possible exception of the army recruits of MacManus, the symptoms followed muscular exertion and had no relation to exposure to cold.

It has been noticed on several occasions that only certain kinds of muscular exertion will produce symptoms in some individuals. For example the patient described by Watson and Fischer was under observation for many weeks and hæmoglobinuria occurred only after walking. Meyer points out that other kinds of exercise such as cycling do not lead to hæmoglobinuria.

The following notes are of two cases of hæmoglobinuria in public school boys. Both were in the habit of playing strenuous school games and running long distances on grass, without symptoms, but attacks followed immediately after running on a hard road.

CASE 1—A schoolboy, aged 17½, complained on Feb. 16th, 1916, of passing blood in the urine after running in the final heat of a mile race on the road. He had noticed it on two previous occasions after running on the road. The race was at 12.30 P.M. and the urine passed at 2.30 was dark brownish red and gave a strong reaction with the guaiacum test for blood. It contained a great deal of albumin and many urate crystals, but no red blood corpuscles. At 6 P.M. it was slightly smoky and contained a quantity of albumin. At 10 P.M. it was clear and of normal appearance and free from albumin, and remained so. On March 1st after running in a half-mile race on grass the urine was normal and contained a faint trace of albumin only. Several tests were made later after exercise, but hæmoglobinuria was never found again.

This boy was in hard training for athletic sports and was in the habit of taking much exercise. Hæmoglobinuria was never noticed except on these occasions after running on the road. In December, 1936 (twenty years later), he reported that he was perfectly well and that the symptom had never recurred, though he had played football, cricket, and squash racquets in the interval.

CASE 2—A schoolboy, aged 17, after having played in several preliminary football ties ran about two miles on the road as part of his training for the final. Immediately afterwards he passed urine that was slightly turbid and almost black and gave a strong guaiacum reaction. After centrifuging, the supernatant fluid was dark brown, and the deposit consisted entirely of granular detritus. No red blood corpuscles were found and no pus or crystals. Two hours later the urine was sherry coloured, and contained a trace of albumin but no red corpuscles. After another two hours it was pale, perfectly clear, and apparently normal.

This patient too was in hard physical condition and had been playing strenuous football for many weeks and running long distances without symptoms. The only occasion on which hæmoglobinuria was noticed was after this run on the road. The blood Wassermann reaction was negative.

It seems unlikely that this sequence of events can be nothing more than a coincidence, but it is difficult to see the connexion. Lordosis has been suggested as the cause which precipitates an attack. Neither of these patients had marked lordosis, and there seems no reason to think that running on a road should induce a more lordotic posture than running on grass. No tests were carried out to prove whether the pigment was blood hæmoglobin or muscle hæmoglobin. Neither patient had any symptoms other than the hæmoglobinuria, and neither was anæmic nor jaundiced. The rareness of hæmoglobinuria is general and this association in particular seems perhaps to justify these notes.

I am indebted to Mr. Herbert Perkins, pathologist to the Paddington Green Children's Hospital, for his help in urine analyses.

REFERENCES

- Lang, K. and Braun, A. (1931) *Z. klin. Med.* 118, 374.
MacManus, D. (1916) *Brit. med. J.* 1, 552.
Meyer, E. (1928) *Handbuch der normalen und pathologischen Physiologie*, Berlin, vol. vi, p. 596.
Watson, E. M. and Fischer, L. C. (1935) *Amer. J. clin. Path.* 5, 151.
Wits, L. J. (1936) *Lancet* 2, 115.

RUBBER AND SPERM-SURVIVAL

By R. M. RANSON

(From the Sir William Dunn School of Pathology, Oxford)

IN the annotation on Dr. Huhner's work on sperm survival in *THE LANCET* of May 22nd it is stated that sperms may die from the action of some chemical used in the manufacture of rubber condoms. Dr. Huhner does not mention this in the paper referred to, but he states that the dusting powder used to ensure easy adjustment of the condom kills the sperms. These are subjects which have been studied for some time in the course of the general research on chemical contraception carried out under the direction of Mr. John R. Baker, D. Phil., in the Sir William Dunn School of Pathology.

It has been found that ordinary dusting powder (french chalk) is without effect on sperms, but certain sorts of rubber are spermicidal. There is a great difference in various sorts of rubber in this respect. The most spermicidal appears to be latex rubber, for example Durex, made by the London Rubber Co., and the test-ended sheaths for use in the tropics made by the Hygienic Stores Ltd. The least spermicidal are the grade A 1 and grade 2 test-ended

sheaths made of moulded rubber by the Hygienic Stores. The following are intermediate Lambutt No 7 made by Lambert's Ltd. and the following products of the Hygienic Stores. Luon X.L. Inflated Para rubber No 2 washable moulded rubber trans parent Ceylon rubber Paragon Paragon dyed red.

In my experiments sperms are caught in sheaths of the least spermicidal sort, transferred at once to glass tubes and brought to the laboratory. Here they are put into various sheaths in a damp chamber maintained at 37° C. For economy I put only 0.5 c.c. of semen in each sheath. In the highly spermicidal sheaths nearly all the sperms are dead in three-quarters of an hour and all life is extinct in one hour. In the scarcely spermicidal sheaths there is still full activity at 1½ hours and the sperms are not all dead until 5 hours. The control sperms in a glass tube at 37° C are still at full activity at 5 hours.

Research is in progress with a view to finding out whether the spermicidal powers of certain sorts of rubber can be utilised as a means of contraception.

When a physician wishes to examine a specimen of semen for motility he should get his patient to use a sheath of the least spermicidal sort and to transfer the sperms soon after coitus to a clean glass specimen tube provided with a ground glass stopper or waxed cork. This should be left at room temperature until examination which should be done after the sperms have been warmed up to 37° C for ten minutes. With this technique the sperms of some donors will still show full activity at 30 hours after ejaculation and a few will still be alive at 3½ days.

I wish to thank Mr. J. Tynen for much practical assistance and the Hygienic Stores Ltd. for providing material. The work was done under the auspices of the Birth Control Investigation Committee.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTIONS OF EPIDEMIOLOGY AND OF MEDICINE

At a combined meeting of these sections held on May 28th, with Surgeon Captain S. F. DUDLEY in the chair a discussion on

Air Conditioning

was opened by Mr. R. FREDERICK, an Admiralty research worker who dealt with the subject of ventilation. His experience he said had been gained with ships and naval establishments. In ships special attention had to be paid to ventilation because the living space was so limited. Samples of air were sent for examination to the Royal Naval Medical School, Greenwich, or when for any reason the conditions had to be examined in situ a transportable laboratory was used. This with its equipment he described and demonstrated. A reliable and quick means of determining respiratory impurity was, he said, by carbon dioxide determination. A proportion of 12 parts of carbon dioxide per 10,000 was quite harmless. If the respiratory CO_2 in that room were increased to 200 parts per 10,000 nobody would be aware of it. It might be noticeable at 250 parts, but it was only when CO_2 exceeded 300 parts per 10,000 that the effect became really appreciable. Anyone who had lived in an atmosphere where the respiratory impurity was 500 parts per 10,000 would probably remember it for the rest of his life. The apparatus used was devised by J. S. Haldane, the ordinary form of this apparatus read only to 100 parts which was ample for civil purposes, but a more refined apparatus was necessary for Service purposes. The amount of air which must be supplied to keep the CO_2 down to a proper level was from 2000 to 3000 cubic feet per man per hour. This however was more and more coming to be regarded as only one factor; no less important was the question of floor space.

For the maintenance of comfort and a feeling of well-being the first requisite was a moderate temperature with a moderate humidity. In temperate climates the dry bulb was of chief interest and in hot climates the wet bulb. It had been suggested that the ideal was a temperature of 60° F. and 50 per cent relative humidity, but most people would find that

too cold. The greatest measure of agreement would be thought, be accorded to the following

For hard work	60-62° F
For sedentary work	62-64° F
For leisure	64-66° F

with a relative humidity of 70 to 75 per cent. The wet-bulb figures given by Haldane had been widely accepted; they were

In still air	{ 88° F for sedentary work,
	{ 78° F for hard work,
In moving air	{ 93° F for sedentary work
	{ 85° F for hard work.

He thought these temperatures could be placed considerably higher.

Temperature and humidity afforded a certain amount of information whether conditions were such as to interfere with the loss of body heat, but there was another factor to be considered. The beneficial effect of air movement was due to its continual dispersal of the envelope of hot air between the clothes and the skin of the individual and to the increased effect of convection currents—in other words, the cooling power of the air had been increased. Apart from the relation of respiratory impurity ventilation could be assessed by the dry and the wet bulb temperatures, the relative humidity and the air movement. In America this combined effect had been termed the effective temperature and a comfort zone had been worked out which for various reasons was not applicable in this country.

Mr. C. W. PRIOR (Home Office) dealt with air conditioning in factories. The outstanding feature of the industrial field was of course the variety of conditions in various industries. One ship's cabin was much like another theatre compared with theatres and schools with schools, but factories could not be compared as the conditions under which they had to be run imposed upon them by the nature of the processes covered a wide range. In the term factory he included flour mill, cement works, dye works, gas works and electrical stations, and many diverse industries. A proportion of these could be air conditioned, but it was obvious that in any large number of factories or parts of factories air conditioning would not be adopted nor recognised as within the realm of practical politics. The problem in its physical aspects was difficult and the advent of the large single-story partitionless factory had not made it easier. On the other hand there was a large range of factory premises to which air

conditioning could be applied just as well as to non industrial premises, and many plants had been installed for partially conditioning the air supply, including plenum installations for supplying warm air in cold weather, particularly in industries in which light work was carried on. A number of plenum installations were also in use for supplying cool air to furnace workers. Air exhausting plants were used for extracting deleterious products from manufacturing processes, and might be responsible for the whole of the ventilation since the air extracted must be replaced. The regulation of humidity in this country had so far not been adopted in the ordinary factory. There was nothing comparable with the practice in the United States and Canada. If ordinary factories were adequately ventilated as the law required, the problem of humidity was (and would continue to be) regarded as of little significance. The new Factories Bill would assist in bringing about more efficient air conditioning in many workrooms. Dust of any kind must now be extracted where practicable if produced in quantity—the provisions in force were limited to harmful dust. In not a few factories advance had already been far reaching. Even in workrooms where peculiar difficulties had to be overcome, and dangerous processes were carried on, good conditioning might be found. Thus had come about because employers had agreed to the provision for higher standards of ventilation while not neglecting temperature requirements. Radiation was not an air conditioning factor, but one to be taken into account in any relative temperature evaluations. He concluded by asking to what extent in factories complete air conditioning should be adopted or recommended, even where it might be adopted with advantage, he was doubtful if the regulation of humidity was in general necessary.

Prof E. M. FRAENKEL discussed allergic conditions and air purification. Pollution of the air was of importance in different types of allergic complaints such as hay fever, asthma, and some cases of urticaria and eczema. The types of allergens which were effective were either outdoor or indoor impurities. The latter might be brought in by air or clothing or might consist of allergen forming material already present (horsehair, feathers, woollen carpets, moulds, rugs, and the like) or of breakdown products formed from innocuous indoor material by the action of moulds. Air purification in the case of allergic patients was not identical with air conditioning. The walls and the contents of the rooms must be constructed of suitable material, as indoor allergens were a frequent source of trouble. Impurities from outside might be solid particles, fine droplets of moisture, or even gases and vapours—mostly a combination of two or more of these. Various methods such as filtration, freezing, washing, or the influence of an electrostatic field had been devised for air purification. He had himself worked out a special method of chemical and physical filtration for use in connexion with masks, sleeping bags, and cubicles for the diagnosis, prophylaxis, and treatment of allergic cases. This method was demonstrated by a film of an asthma subject sensitive to dog hairs.

Sir WELDON DALRYMPLE CHAMPEYS called attention to the psychological factor in ventilation. In the tropics he had found that white people stood up to moist heat badly, not only because they did not sweat satisfactorily, but because they were depressed by the idea that the atmosphere they were living in was too hot and too moist. He had been struck by the reactions of his companions to increasing heat and humidity, not to be accounted for on a purely

physical basis. People of phlegmatic temperament stood up better to increasing heat. The same sort of thing was found in dug outs in the war. Some men could not stand them, not on account of claustrophobia, but because they thought the place was getting unhealthy. He had also noticed in cabins in ships in hot weather when the portholes had to be kept closed how people felt as if they were being suffocated. The importance of odours in the air could not be disregarded. Odours gave some people the impression that they were being suffocated and made them very uncomfortable, although the actual physical conditions were not unsatisfactory.

GERMAN HÆMATOLOGICAL SOCIETY

INTERNATIONAL CONGRESS AT MÜNSTER

THE first meeting of the newly formed German Hæmatological Society took the form of an international congress held at Münster, Westphalia, from May 10th–13th.

Prof VICTOR SCHILLING (Münster), who presided, gave an introductory address on the historical development and modern applications of scientific hæmatology. Outlining the gradual advance of hæmatological knowledge until the end of the nineteenth century, he dealt in detail with the work of the great hæmatologists of the early twentieth century and the foundation of the old German hæmatological society in 1908. He then reviewed the advances made in the last thirty years which would provide the themes for discussion at the congress.

The scientific communications were opened by a paper by Prof LUDWIG ASCHOFF (Freiburg), who discussed the

Monocyte Question

from the anatomical and histopathological standpoint. Reviewing his own work and that of others he came to the conclusion that his original view that monocytes were derived from tissue histiocytes or sinus lining cells could not be maintained and that it was most probable that they arose from undifferentiated mesenchymal elements in lymphoid tissue and were directly transferred to the blood stream as monocytes were never found in the lymph. He emphasised the distinction between monocytes and lymphocytes and went on to discuss the relationship of the plasma cell with the lymphocyte, questioning whether the marrow plasma cell was identical with that of the connective tissue, and suggested that there was still much work to be done both from the histological and cytological aspects in glandular fever and experimental *B. monocytogenes* infections.

THE PRESIDENT surveyed the clinical aspects of the subject and held that few cases of true monocytic leukaemia had been described, his criteria being in addition to the blood picture, a leukæmic infiltration of the organs. Rather surprisingly he maintained that the bone marrow should show no alteration. Dealing with other forms of monocytosis he mentioned the false monocytosis sometimes found when the specimen of blood has been collected from the ear, it only occurs if the first drop of blood is used for examination and is most common in cyanotic patients. He suggested that this was a static phenomenon and produced convincing evidence that the cells were not shed vascular endothelium as has been suggested.

Dr E LAUDA (Vienna) reviewed the relation of the spleen to blood disorders laying especial stress on the evidence for an endocrine function which controlled bone marrow activity and the part played by the spleen in iron metabolism. He believes that aplenic siderosis is indicative of cellular dysfunction rather than increased activity and that there may be both active and passive hemolysis in the spleen, of which the latter is the more common.

The afternoon was occupied by a series of admirable papers on the

Pathology of the Bone marrow

Prof. H SCHULTEN (Hamburg) described the normal cytology and technique of sternal puncture. He upheld the triaxial view of hemopoiesis but questioned the existence of the haemocytoblast. He was in doubt as to the difference between a pro-erythroblast and pro-megaloblast although emphasising that the megaloblastic family of erythrocytes must be clearly distinguished from the normal erythroblastic series. He suggested that mature cells did not remain long in the marrow.

This communication was followed by an account of the pathology of the bone marrow by Prof HENNING (Fürth) which was one of the best contributions to the congress. He described the changes in sternal puncture preparations found in many blood diseases. In pernicious anemia, for example in addition to the megaloblastic proliferation, there are abnormalities in the granulocytes and megakaryocytes in both of which hypersegmented giant forms are seen these revert to normal after liver therapy. This change together with an enormous erythroblastic activity can be seen twenty four hours after the first injection of liver. Prof Henning doubts whether one should accept the idea of two distinct erythrocytic series—the megaloblastic and erythroblastic. He said he had observed a reduction of megaloocytes in the circulating blood before the increase of the reticulocytes and although there were equally striking alterations in the granulocytes after liver therapy yet it had never been suggested that there were two families of these cells.

Arsenic was found to produce an increase in ripening of the megaloblasts in pernicious anemia but only of pathological ripening with the result that there was a considerable increase of megaloocytes. Marrow puncture in the leukemias was of little value except in the aleukemic cases when it was of great diagnostic help. In agranulocytosis the cytology varied in some cases there was an absence of free elements with a proliferation of reticulum cells—this was the so-called empty marrow. In other cases there was an apparently normal marrow but the most mature cells were lacking; and in the third type there was a great increase in myeloblasts or pro myelocytes. In every case the cells were abnormal showing vacuolation and nuclear changes. In glandular fever there was no cellular proliferation in the marrow and the abnormal cells found there were derived from the circulating blood. Prof Henning described the various changes found in infectious diseases and the value of sternal puncture in the diagnosis of parasitic diseases—malaria kala azar &c. Finally he discussed the value of bacteriological culture of bone marrow. In a series of 350 cases of typhoid fever a positive culture was obtained from the sternal puncture material before a growth could be obtained from the circulating blood.

Prof ROTH (Zurich) discussed the mechanism controlling the entry of cells into the circulation and suggested that the bone marrow could be regarded as a closed or controllable system whereas the spleen

was an open system in conditions such as the leukoses in which there was myeloid proliferation in the spleen and liver the abnormal cells in the circulating blood were derived from these organs rather than from the bone marrow.

Dr R KLIMA (Vienna) described the changes in the bone marrow in multiple myelomatosis and Hodgkin's disease. In cases in which there was clinically a localised myeloma in one of the long bones he had invariably found myeloma cells in the sternal puncture. He regarded myelomatosis as a systematised proliferation analogous to the leukoses and suggested that the myeloma cell was closely related to the marrow plasma cell which he derived from the myeloblast but distinguished from the plasma cell found in the connective tissue in chronic inflammatory conditions. In Hodgkin's disease although at autopsy the bone marrow was involved in 70 per cent. of cases no characteristic changes could be found by means of sternal puncture during life. Dr Klima believed however that diagnosis could be made by means of lymph node puncture; but neither his criteria nor his conception of the typical cytology appear to correspond with the present pathological views.

The second day opened with an account of

Blood platelets

by Prof HITTMANN (Wels Austria). He discussed difficulties of enumeration and suggested that for ordinary purposes a visual estimation of their numbers in a supravitral preparation was sufficient. When a numerical count was made the method must be stated owing to the enormous variation in normals with the different techniques (250 000 Ponio might read 900 000 Hoffmann). Prof Hittmann upheld Wright's theory of a megakaryocytic origin for blood platelets although as he admitted he was putting his head into the lion's mouth by doing so at Münster (Prof Schilling maintains that the platelets represent the shed nuclei of the erythrocytes and that megakaryocytes are merely histiocytes in nature).

In bone marrow studies, however the number of platelets was the same as that of the circulating blood and the formation of platelets from megakaryocytes could only be observed under abnormal conditions. Prof Hittmann upheld Rohrer's view of explosive rupture of the megakaryocyte at the time of formation. He discussed the changes in platelets in various diseases and their relation to blood coagulation which he felt was not understood. An animated discussion followed the question of the President put forward his views on the method of rapid fixation of the platelets which he believed he could substantiate by experiment. Prof VORR (Solingen) showed that platelets contained no thymonucleic acid although in the same medium those of isolated erythrocytes were found in large quantities of it.

Prof WERNER SCHULTEN (Hamburg) discussed
The spleen

with special reference to the changes in the spleen in agranulocytosis. He described the changes in the spleen in agranulocytosis and suggested that the platelets might be derived from the spleen. He discussed the changes in the spleen in various diseases and their relation to blood coagulation which he felt was not understood. An animated discussion followed the question of the President put forward his views on the method of rapid fixation of the platelets which he believed he could substantiate by experiment. Prof VORR (Solingen) showed that platelets contained no thymonucleic acid although in the same medium those of isolated erythrocytes were found in large quantities of it.

water, or even under heparin, however, hirudin which acted on the capillaries as well as on the coagulation mechanism prolonged the bleeding time, further, the bleeding time is not markedly prolonged at 0° C although blood does not coagulate at that temperature

Leucocytes —Parasitology

In the afternoon Prof HOFF (Würzburg) discussed the dynamics of leucocyte regulation and Dr THADDEA (Berlin) described changes in the leucocyte adrenaline response in disorders of the suprarenals. In Addison's disease the normal leucocytosis obtained after the subcutaneous injection of 1 mg of adrenaline is absent but treated cases give a normal reaction, on the other hand in cases of cortical adrenal tumour the leucocyte adrenaline reaction is exaggerated.—Dr UNDRITZ (Orselina Locarno) described a series of cases showing the inherited Pelger Huët anomaly of the granulocytes and Prof ADLER (Switzerland) described a new form of inherited granulocytic abnormality in which the nuclei were normal but the cells showed large darkly staining granules.

Prof KIKUTH (Elberfeld) showed that in malarial treatment no drug has been found which attacked the free merozoites. Plasmoquine destroyed the sexual forms, and Atebrin and quinine the asexual forms.—Following this Prof. P. MUEHLENS, director of the tropical institute at Hamburg, demonstrated some excellent cinematographs of the life cycles of malaria, leishmaniasis, and various types of spirochetes and filariae.

The last day was devoted to

Anæmia

The PRESIDENT read a paper on the structure of the erythrocytes. He dealt particularly with the relation of reticulation to polychromasia and described the peculiar inclusions found in methemoglobinæmia and the significance of bartonella like bodies found in the erythrocytes in anæmia.

Prof E. MEULENGRACHT (Copenhagen) dealt with pernicious anæmia. Recapitulating his experimental work on the pig stomach (see *Lancet*, 1935, 1, 493) in which he showed that intrinsic factor was only to be found in the pylorus, duodenum, and cardiac region and was absent from the fundus, he went on to describe his observations in a number of stomachs obtained post mortem from pernicious anæmia cases. These showed a severe atrophy of the fundic region with intestinal heterotopia but practically no change in the pylorus or duodenum—a finding completely the reverse of that which he had anticipated from his animal observations. However, it had been shown that the proportionate amount of intrinsic factor per c cm was unchanged in pernicious anæmia but the total quantity of gastric juice was reduced and he was at present investigating the amount of pyloric and Brunnerian glandular substance in the pernicious anæmia stomach. He believed that regular oral administration was preferable to occasional injections both from the point of view of cost and in minimizing the possibility of nervous changes. He found that a subtherapeutic dose of stomach powder (5 g daily) when taken with liver residues (after extraction of the active factor) which were inactive alone produced a therapeutic result far greater than could be explained by a mere additive effect.

In the discussion which followed it was agreed that oral administration was mostly preferable to parenteral but it was imperative that the anti-anæmic substance should be taken in the form of

medicine and not as a foodstuff which might be shared with the rest of the family, and in many cases it was only by means of parenteral administration that one could be sure that the patient was receiving adequate and regular treatment.

Dr H. J. WOLF (Göttingen) read a preliminary communication on the experimental anæmia produced in rabbits by means of typhoid toxin, which was only controllable by the administration of active liver material and might be made to serve as a biological method of assay. However, there were considerable difficulties, the chief being the severe illness produced in the animals which often resulted in a fatal outcome before the effect of the anti-anæmic substance could be judged.

Dr KLIMA discussed the classification of the anæmias and suggested that it was impossible to group them solely according to cytological, etiological, or therapeutic criteria and that it was more valuable to consider them from the point of constitutional and familial aspects.

The concluding communication was by Dr L. HEILMEYER (Jena) on the iron deficiency anæmias. He dealt in particular with the iron content of the serum in various conditions, this was estimated photometrically and in males found to be 100–150 γ per cent and in females 50–100 γ per cent, but this difference between the sexes disappeared after the menopause. In a normal person, said Dr Heilmeyer, the serum iron is fairly constant in value, the iron depôts being full and any excess iron being excreted by the gut and skin, never by the urine. However, in iron deficiency anæmia the serum iron is low and the deficiency of storage may be demonstrated by the intravenous administration of 10 mg of iron and repeated estimations of the serum iron. In a normal person the serum content rises to 400 γ and then falls very slowly, in deficient iron storage it rises to 180 γ and then quickly falls. In acute infections the serum iron drops to a very low figure even when no anæmia is present and large quantities of iron must be given to maintain it at a normal figure during the infection. The explanation of this is obscure but may be related to the increased activity of the reticulo-endothelial system and it is known that a siderosis of the spleen is not uncommon in infections. In untreated pernicious anæmia, the serum iron is almost invariably high and this drops to a normal figure after treatment but in those cases in which there is deficient iron storage it will drop below normality and it is these cases whose recovery is delayed until iron is given in addition to anti-anæmic principle. Dr Heilmeyer pointed out that the hæmatological criteria for iron deficiency were hypochromia and plancytosis. Microcytosis was not invariably associated with iron deficiency. As to the form of iron therapy, in most cases it made little difference provided it was given in sufficient amounts and although the ferrous salt was biologically active, ferric salts were readily reduced, probably with the aid of vitamin C. In some cases it was expedient to give a ferrous salt and in severe dyspepsia intravenous iron was to be recommended.

At the conclusion of the meeting Prof MEULENGRACHT expressed the appreciation of the foreign delegates from the fifteen countries represented at the conference of the arrangements made.

Dr STORTI (Rome) announced that the Italian Hæmatological Society, of whom he was the representative, would hold an International Congress in Rome in 1941 and invited the delegates present to attend it.

GENERAL MEDICAL COUNCIL

SUMMER SESSION, MAY 26TH-29TH 1937

New Penal Cases

(Concluded from p. 1349)

MEASURE FOR CANVASSING

The Case of *Bakhtawar Singh Jain* registered as of Hindustan House, Weoley Castle-road, Selly Oak, Birmingham L.R.C.P. Edin 1921 L.R.C.S. Edin. 1921 L.R.F.P.S. Glasg 1921 who had been summoned to appear before the Council on the following charge—

That being a registered medical practitioner you have canvassed the patients of other registered medical practitioners for the purpose of inducing them to become patients of yours and in particular (1) on Oct. 31st 1936 canvassed Albert Bird obtained from him the medical card issued to him as a person insured under the National Health Insurance Acts and procured his transfer to you as an insurance practitioner (2) in or about October 1936 canvassed Arthur Eccleston and his wife Doris Eileen Eccleston, and endeavoured to obtain them and their child as patients (3) in or about September 1936 on two occasions canvassed Winston Haig Evans with a view to inducing him to transfer to you as an insurance practitioner (4) in or about October 1936 on two occasions canvassed Mrs. Florence Jones with a view to inducing her and her husband and three children to become patients of yours. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

Dr. Jain appeared accompanied by Mr. Arthian Davies counsel instructed by Messrs. Cole and Matthews agents for Mr. Frank Rowland solicitor Birmingham. The complainant, Dr. Francis Ronald Gedye, a local practitioner was represented by Mr. W. A. Macfarlane counsel instructed by Messrs. Le Brasseur and Oakley solicitors.

Mr. Macfarlane did not call evidence to support the charge of canvassing Albert Bird. He called Mrs. D. E. Eccleston who said that in October 1936 her doctor and her husband had been Dr. Gedye. She had just returned from hospital and one afternoon Dr. Jain had knocked on the door and she had opened it and spoken to him on the door step. He had asked her whether she had a doctor. She had replied Yes. He had then asked her whether her husband had a doctor and she had again answered Yes and that they were attended by Dr. Gedye. Dr. Jain had asked if she would like her daughter to go on his panel and had given her a professional visiting card. This she had later burnt. Her husband, who had been sitting in the front room asked who was there and when she had told him that it was Dr. Jain he had shouted Tell him to clear off.

Cross-examined by Mr. Davies she said that respondent had never attended her daughter nor had she ever taken the child to his surgery. He had told her that he had been attending her next door neighbour a Mrs. Kesterton who had told him that Mrs. Eccleston was ill and asked him to call on her. Mrs. Kesterton had never said anything to her about asking Dr. Jain to call.

Arthur Eccleston her husband said in evidence that he had known the doctor by sight. In this conversation all of which he had overheard the doctor had asked her if she and her husband would go on his panel and whether they would like the child to go on it as well. As Dr. Jain was leaving he had said I shall have to call round again. Witness had replied You'd better not or you'll get into

serious trouble. On cross-examination he said that he had made a statutory declaration at the request of a gentleman from London. Mr. Davies put to him a document which he admitted writing and signing on a later date. It said that his wife told him that the doctor had been sent by Mrs. Kesterton that he had not warned the doctor he would get into trouble; that the doctor had not asked him and his wife to come on his panel and that the allegations of canvassing had been put into his mouth by a solicitor's clerk. Asked the circumstances in which he had written and signed this document, he said that some weeks ago a woman who kept a small draper's shop some distance away had unexpectedly sent for his wife and offered her work on two mornings a week. Three days before the hearing she had asked him and his wife to supper they had gone there, and afterwards Dr. Jain had walked in and talked about the case showing them some papers and saying that he was a good doctor and there was no reason why witnesses should go to London to give evidence against him. He had also said that he was taking proceedings for slander against another doctor and that if he did not win his case before the G.M.C. the witness would be brought into the slander case and get into serious trouble. Witness had therefore considered that the best thing to do was to wash his hands of the G.M.C. case. He had written the contradictory statement at the respondent's dictation.

Mr. W. H. Evans said that from June 1930 onwards he was on the panel of a Dr. Thomas. He had first met Dr. Jain in July in his lodgings but had not spoken to him. They had conversed in September at the same place. Dr. Jain had asked him on whose panel he was and then whether he would like to change over to his panel. Witness had refused but several times after that his landlady had tried to persuade him to change. On the first occasion Dr. Jain had asked the witness for his medical card. In cross-examination he said he had a brother called David but that the respondent was not asking him about David's card. After he had made a statutory declaration a gentleman whom he did not know had induced him to sign a contradictory statement of which part was true and part was not as he had got timid. This gentleman had told him that he would be the only one going to London. Respondent had not said he had been asked to return witness's medical card.

Mrs. Florence Jones said that in the latter half of 1936 she had had no doctor but her husband had a panel doctor. They had recently moved to their present house. A fortnight after they had moved in Dr. Jain had spoken to her on the doorstep and asked her if she would like to sign on with him. She had said No she would sign on with another doctor before she would sign on with him. He had given her a card which she had burnt. A week later Dr. Jain had again asked her to come on his panel but her husband had said that they had already signed on with another doctor. In cross-examination she said she did not know whether respondent was attending her next door neighbour or another neighbour Mrs. Tacey.

Mrs. Ellen Atterbury said she had known Dr. Jain by sight and had moved to her present address at the end of August 1936. She and her husband then already had panel doctors. Dr. Jain had called at her house some time in October and her small daughter had admitted him. Witness had told him that her husband was in town on business. He had remarked how nice the front lawn was looking. He had gone on to say that he was attending a child

in another street, but that her child looked healthy enough. He had left his card for her husband and had called back again the same evening. In cross-examination, she said that Dr Jain had not called for the purpose of seeing her husband about his garden.

Dr Jain, giving evidence in his own defence said that he had first seen Mrs Eccleston when he was attending Mrs Kesterton's child. Mrs Kesterton had told him that Mrs Eccleston wanted a doctor. He had seen Mrs Eccleston standing at her door, she had greeted him, and he had entered into conversation with her. He had once treated her child in his surgery, on June 27th, 1936, and the visit had been entered in his day book, which he produced. He had asked Mrs Eccleston how she was and she had replied, and said she had a doctor of her own. He had asked after the child, and she had recalled to him the day she had brought the child to the surgery, she had said that she hoped, if it got ill again, he would not mind her bringing it back. He had not seen her husband nor given her a card, nor indicated that he wanted to attend on her child. The lady who kept the drapery shop had been one of his patients and had planned the meeting of her own accord. Mr Eccleston had told him that he had been pestered for the last few weeks by solicitors and their clerks to go to London and wanted to wash his hands of the whole affair, because he had made a statement which was not correct but had simply been put into his mouth. Dr Jain replied that if he signed statements at all he had better write the truth then and there. He had written it in his own words and handwriting, and no part of it had been dictated to him.

Dr Jain said he had spoken to Mr Evans thinking that he was David Evans, a brother who had been his patient since August. The Birmingham Insurance Committee had twice written to him asking him to return David Evans's medical record card, and he had therefore said to Mr W. H. Evans that he had been asked to return his medical card. He put in evidence the letters from the committee. Mr Evans had replied that he must have mistaken him for David. He had not asked Evans to become his patient. Dealing with Mrs Jones's evidence, he said that one day on his way to his surgery he had been asked by Mr Jones, whom he had not then known, whether he was treating Mrs Facey's child, and he had replied that he was. Mr Jones had then said that Facey had spoken to him about the respondent and that one of these days Jones would come to see the respondent, for he had just moved away from his present doctor and would like to sign on with respondent Mrs Jones, who was standing by, had then said she had a nasty cold and would come to see respondent. He had not asked her to sign on. He had not seen either of the Jones's after that. The Atterburys lived next door to the Faceys, whose child he was attending. Mr Atterbury had on one occasion been working in his front garden and had greeted respondent, who had complimented him on the look of the garden. Desiring to put the garden of his surgery in order he had called a few days later to see if Atterbury would work on it. He had found Mrs Atterbury in and had left his card, and in the evening he had called again and spoken to Mr Atterbury about the garden. He had never invited any of the witnesses to come on to his panel.

Cross examined, he said that he had been surprised to find the Ecclestons at the house of his patient, though he had known they were to be witnesses before the G.M.C. Mr Eccleston had said that he

wanted to hear the true story from respondent, as he had been pestered by solicitors. Respondent had shown him some documents to prove the allegations were untrue. The brother of one of his patients, a Mr Waterfield, had brought him Evans's statement. This patient had asked Evans about his evidence and Evans had replied that his statutory declaration had been made under influence and that he was prepared to give the true facts. The patient had then put down his statements and handed them to respondent.

His day book showed receipts of money on each day. These were entered at the time of receipt therefore they were presumably in chronological order.

The Legal Assessor pointed out two dates in 1936 and asked him whether the 6 had not been altered from a 7. Mr H. L. Eason put to him that the last entry on one of the left-hand pages was the name of Joyce Eccleston, the next entry at the top of the right hand page bore a date which had been altered from a 7 to a 6, and lower down another entry had been similarly altered. Lower still there were two more entries, corresponding in sequence of date but purporting to be 1937 and not 1936. On the next page two other dates had apparently been altered. All these entries were subsequent to the entry of Joyce Eccleston, which would then correspond to the date on which respondent had said he had seen her. In reply, respondent said he must have copied this material from another book which he had not with him.

The Legal Assessor: "Why then did you get the entries out of order?"—"It must have been through a slip of the pen."

"They are all slips of the pen, are they? Is that your explanation?"—"Yes."

Re-examined by Mr Davies, he said he kept two books for income tax purposes. He had not altered this book to show that he had attended Joyce Eccleston in June, 1936. The entry had been made on June 27th, 1936.

After deliberation in camera the President announced that the second, third, and fourth charges had been proved to the satisfaction of the Council and the Registrar had been ordered to erase the name of Bakhtawar Singh Jain from the Register.

CHARGES OF CANVASSING DISMISSED

The Council dismissed the charges brought against Hugh McNicholl, registered as of c/o 105, London road, King's Lynn, Norfolk, M.B., B.Ch. 1933, N.U. Irel, who had been summoned to appear before the Council on the following charge—

That being a registered practitioner you have systematically canvassed personally and/or by means of an agent or agents for the purpose of obtaining patients, and in particular (1) in 1936 or 1937 or in both of those years, canvassed patients of Guy Kinner a registered medical practitioner, by furnishing or causing to be furnished to them professional cards on which your name, qualifications, address and telephone number were printed, (2) in 1936 or 1937 canvassed Mrs Stacey by causing one of the professional cards to be furnished to her, and by endeavouring yourself to obtain from her the medical card issued to her husband as a person insured under the National Health Insurance Acts (3) in or about March 1936 canvassed by means of an agent Mrs Bertha Florrie Gardiner and thereby obtained a child of hers as a patient, (4) in or about March 1936 canvassed the said Mrs Bertha Florrie Gardiner and thereby obtained the transfer to yourself as an insurance practitioner of her husband Thomas Reece Gardiner, a person insured under the National Health Insurance Acts (5) in or about March 1936 employed the said Mrs Bertha Florrie Gardiner as an agent for the purpose of obtaining patients by means of the

distribution of professional cards which you handed to her and on which your name, qualifications, address, and telephone number were printed. (6) In or about May 1936 attempted to employ the said Mrs. Bertha Florrie Gardiner further as an agent for the purpose of obtaining patients. (7) In the summer of 1936 employed Mrs. Collins as an agent for the purpose of obtaining patients by means of the distribution of professional cards which you handed to her and on which your name, qualifications, address, and telephone number were printed. (8) In or about February 1937 canvassed Mrs. Kimber by means of an agent by whom a professional card on which your name, qualifications, address, and telephone number were printed was furnished to her. (9) In or about December 1936 on two occasions canvassed Charles Hartridge by means of an agent by whom a professional card on which your name, qualifications, address, and telephone number were printed and furnished by him. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

The complainants were the London and Counties Medical Protection Society and members of the Council who were also members of that society withdrew. The complainants were represented by Mr. Macfarlane, instructed by Messrs. Le Brasseur and Oakley, and Dr. McNicholl appeared, accompanied by Mr. Charles Davis, solicitor of Messrs. Bulmerig and Davis.

The first witness called in support of the charges was Dr. Guy Kinnear, a practitioner of Nottingham, London, S.E., who said that he had started practice in that neighbourhood in 1935. The respondent had come afterwards and lived about a mile away. The patients who would give evidence lived on a housing estate nearby. One other doctor lived in the estate, but neither witness nor respondent lived there. About a year ago a Mr. Bailey who with his wife and daughter had been witness a patient for some time but was now dead, had brought witness a professional card of the respondent (put in evidence). A Mr. Kimber who would give evidence was also a patient of the witness.

Mrs. Gardiner said she had moved to her present address in March, 1936. A few days afterwards her little girl had had an accident in the street and her face had been cut. A woman had suggested that witness should take her to the shilling doctor and had shown her a house where respondent was visiting at the time. The respondent had put a stitch in the child's face and witness had taken the child to his surgery to see him several times afterwards. On one of these occasions he had asked witness if she had a panel doctor. She had replied that her husband was on the panel of a Dr. Power but that his medical card had not come through. Respondent had asked the witness if her husband would go on to his panel and if so whether she would bring respondent the card. She had taken it to the respondent and he had kept it. Her husband had not transferred to respondent's panel until April 1936. Respondent had told her that he had come from Greenwich where he had been assistant to a doctor at £8 a week and was trying to work up a practice. He was earning only £4 a week, so he was anxious to get patients. He had given her about twelve small cards with his name, address, and telephone number. She had been in the habit of going to help women who were being confined and she had two of respondent's cards bearing the addresses of maternity patients whom she had been going to attend for him. Respondent had asked her to get patients for him. She had left two cards next door at the house of a couple called Bargarves, who had both become his patients; and at the houses of certain other persons who as far as she knew

were all on respondent's panel. They had been strangers to the district. She had given three of the respondent's cards to a solicitor's clerk. These were in evidence.

On a day in May 1936 respondent had visited her in her house and asked if she had any more patients for him. Her husband had said that this was not right and that doctors should not canvass. Respondent had answered that he must get patients as there was so much competition about, and her husband had said he would not permit her to canvass. She had got no more patients for respondent. She had seen one of the cards in the possession of Mrs. Collins, and had also seen Mrs. Collins visiting from house to house and leaving the cards. Mrs. Kimber was a friend of the witness and she had seen a similar card in her house.

In cross-examination Mrs. Gardiner said that at the time of her first visit with her daughter to the respondent she had told him about her affairs and her husband's complaints. Her husband was a shell-shock patient who suffered from neurasthenia. Respondent had not at the time asked her to bring her husband's card to the surgery. He had done this at about the third interview. She had told him that she understood the work of a handy woman and would like some work. Asked if she and the doctor had not fallen out, she replied that if this was the respondent's version of the facts it must stand as far as she was concerned, it was a secret. She agreed that she had fallen out with him but denied that she disliked him a good deal. She had walked with Mrs. Collins part of the way round the streets when Mrs. Collins was leaving cards at every house. Mrs. Collins had asked the inhabitants whether they had a panel doctor and had told them that the card was that of a thoroughly good doctor whom she could recommend. Witness admitted that she had been very concerned about finding the respondent's card with Mrs. Kimber, there were four doctors in the neighbourhood all of whom had to make a living; we make it our concern. She had kept the cards because there had been rumours going round that she did not know her work and was responsible for Mrs. Collins's illness after her confinement, also that she was going to be persecuted in one way and another and that respondent was going to bring an action against her for slander.

Respondent's solicitor admitted that two other patients had received cards from Mrs. Collins but denied that she was respondent's agent.

Dr. Charles Wortham Brook, another practitioner of Nottingham said that after receiving certain information from a patient he had written a letter to respondent saying that a woman had been trying to persuade the wife of one of his patients to go on respondent's panel and a king for respondent's explanation. He had had no reply until respondent had telephoned to him eleven days afterwards saying that he had sent a reply. He had since received respondent's cards from several of his patients. Respondent had over the telephone, suggested a meeting but after careful consideration witness had decided that he ought not to meet him alone. He had got into touch with other practitioners who had advised against the meeting. He had sent the papers to the Medical Defence Union but this body had taken no action as respondent was also a member. He was not co-operating with other practitioners to get respondent out although respondent was putting them in a difficult position.

Dr. McNicholl examined on his own behalf said that he had never authorised anybody to canvass.

or give his cards away. He had had a number of cards printed so that he might give them to patients to remind them of his consulting hours and address. He had not given them to anyone other than his patients. The first he had heard of the allegations had been in a telephone conversation with the secretary of the Medical Defence Union, whom he had afterwards visited. The secretary had told him that Dr Brook had complained that one of his patients had received a card, and advised him to find out the person responsible. The description of the woman who had given the card corresponded with that of Mrs Collins, his housekeeper. On returning home he had asked Mrs Collins if she had distributed cards, and she had denied it, but eventually she confessed that she had taken some of his cards out of his surgery to give to her friends. Mrs Collins had been a patient of his early in 1936 and he had attended her in her confinement. Mrs Gardiner had been looking after the house. He had had high words with Mrs Gardiner, after which she had never done any more work with him. He would not employ her any more, because she interfered with him. Mrs Collins had afterwards asked him for work and he had employed her, first as his charwoman in his surgery and afterwards, when he bought the house, as his housekeeper.

On the occasion when he had first treated Mrs Gardiner's child, she had asked him if he took panel patients, and said she would like to get her husband on to his panel, because he always had fits whenever he saw his present doctor. Later she had brought the panel card to him for signature. The only cards he had ever given Mrs Gardiner had borne the addresses of maternity patients to whom he was introducing her as a handy woman. He denied ever asking her if she had got him any more patients or telling her anything about what he was earning. In addition to a part-time assistantship he had two appointments, he was never short of money and in fact had soon been able to buy his house. Mrs Stacey had consulted him for a skin rash and he had prescribed injections. At one interview her husband had asked him if he was on the gas company's panel, and on hearing that he was had offered himself as a patient, and respondent had signed his card then and there. He had never at any time canvassed for patients. He had been warned against Mrs Gardiner by another doctor and would never have asked her to do anything for him. He had never employed Mrs Collins as his agent, and when he had found out that she had canvassed he had told her to go. He was retaining her for the time because she had no other means of livelihood.

Cross examined, he said that he had not received Dr Brook's letter until six days after its date. He had sent a reply saying that he knew nothing about the canvassing and could only suppose that it had been done maliciously, a copy of the letter was in evidence. Mrs Collins said in evidence that she had consulted respondent in March, 1936, and he had attended her in her confinement in September. Mrs Gardiner had been recommended to her by respondent, but Mrs Gardiner and respondent had quarrelled. Respondent had given her work and had lent her money. He had never given her any cards to distribute, but in her gratitude to him she had taken some cards without his knowledge and distributed them. He had discovered this and said he could not understand how people were getting his visiting cards. She had not at the time enlightened him, because she did not want to lose her sole means of support. He had, however, challenged her on a

later occasion and she had confessed. He had wanted to put her out of the house there and then, but she had persuaded him to keep her on, which he had done out of compassion.

Mrs Ivy Doyle said that she had called every day to set the respondent a house in order. Respondent had asked Mrs Collins in her presence if she had taken any cards out of the surgery, and Mrs Collins had denied it. Witness had afterwards asked her the same question and Mrs Collins had again denied it, but afterwards admitted it to the respondent. She had asked the witness to beg her off from dismisal.

Mrs Elizabeth Perrott testified that respondent had been attending her at her house when Mrs Gardiner had come and asked him to see her child. Mrs Gardiner had been very talkative and had given respondent her whole life history. Respondent had told her to bring the child to his surgery, she had not been able to understand the address, so witness had given her one of respondent's cards which she had by her. Mrs Gardiner had asked respondent if he would take her husband on to his panel.

A Mrs South also said in evidence that Mrs Gardiner had requested respondent to take her husband on to his panel.

Mr T C Smith, formerly the owner of respondent's house, said that he had given one of the respondent's cards to Mrs Kimber without respondent's knowledge, as Mrs Kimber had asked him for the address of a doctor to treat a sty in her eye. Mr Stacey said in evidence that he had gone on to respondent's panel of his own accord. He had previously had a card left at his house, but did not know by whom. Respondent had been attending his wife when he had transferred to respondent's panel.

After deliberation in camera, the President announced that the charges had not been found proved to the Council's satisfaction.

The Case of Albert Rudolf Rellum, registered as of 39, Dockhead, Bermondsey, London, S E 1, L R C P Edin, 1921, L R C S Ldn, 1921, L R F P S Glasg, 1921, who had been summoned to appear before the Council on the following charge—

That being a registered medical practitioner, you have canvassed the patients of Joseph Frelich, a registered medical practitioner with a view to inducing such patients to become patients of yours, and in particular (1) in or about the month of November 1936, you canvassed William Selley, a patient of the said Joseph Frelich, (2) in or about the month of November, 1936, you canvassed Elizabeth Selley, the wife of the said William Selley, a patient of the said Joseph Frelich, (3) in or about the month of November, 1936 you canvassed George Fred Selley, a son of the said William Selley and Elizabeth Selley, and induced him to become a patient of yours (4) in or about the month of November, 1936, you canvassed William John Selley, a son of the said William Selley and Elizabeth Selley, a patient of the said Joseph Frelich. And that in relation to the facts so alleged you have been guilty of infamous conduct in a professional respect.

Dr Joseph Frelich, a practitioner in Bermondsey, presented his own complaint, and Dr Rellum was accompanied by Mr John Ritchie, counsel instructed by Messrs Simon, Haynes, Barlas and Ireland.

Dr Frelich said that Dr Rellum had been his assistant but he had dismissed him early in March of the present year. Mrs Selley had called at his surgery and told him that the respondent had been canvassing members of her family, patients of Dr Frelich to become respondent's patients.

Mr and Mrs Selley and two of their sons gave evidence to show that Mr Selley had had an accident

some years ago and had claimed compensation. Dr Rellum who had then been Dr Frelich's assistant had examined him and given him a certificate on which he had made good his claim. The family had been friendly with the respondent who had been chronically short of money and had frequently borrowed various sums from Mr Selley. On one occasion he had said that he must get as many patients as he could and had asked them to go on

his panel. They had refused except the youngest son. Mr and Mrs. Selley admitted that they knew that Dr Rellum was under a bond not to practise in the neighbourhood and that he had received a letter from the insurance committee saying that he could not visit patients in Bermondsey.

Without calling on the respondent, the Council decided that the charges had not been proved to its satisfaction.

REVIEWS AND NOTICES OF BOOKS

Diagnosis and Treatment of Arthritis

By RUSSELL L. CECIL, M.D. Sc.D. Professor of Clinical Medicine, Cornell University, London. Humphrey Milford, Oxford University Press. 1937. Pp. 263. 21s.

THIS is one of a series of monographs, edited by Dr H. A. Christian and written by leading authorities whose object is to bring to the practising physician a knowledge of the most approved methods for the diagnosis and treatment of disease. Dr Cecil whose investigations into the infective nature of acute rheumatism and rheumatoid arthritis are of recognised importance has written the volume on arthritis. At the outset he states—and few will differ from him—that there is no disease in the whole field of medicine in which purely symptomatic treatment leads to more barren results. The title is used to cover a wide field including rheumatic fever and certain of the less common forms of arthritis are unusually well described. Septic arthritis including gonococcal and staphylococcal and rarer forms, traumatic, syphilitic and tuberculous arthritis and intermittent hydrarthrosis among others are clearly differentiated. In view of the important researches carried out by the author himself into the bacteriology of rheumatic fever and rheumatoid arthritis it is natural that much space should be devoted to this aspect. The work of other investigators receives due consideration and the conclusion is reached that though the streptococcus is an important aetiological factor, the particular type of streptococcus involved is not yet settled. The findings appear to strengthen the view that mutation takes place between the different types. The author favours the use of streptococcal vaccine by the intravenous route in the treatment of rheumatoid arthritis but warns against overdosage which may cause a severe exacerbation of the disease. There is certainly a reaction against this form of treatment and any benefit that may accrue is now generally attributed to desensitisation rather than immunisation. Other methods of treatment are fully described together with useful systems of diet.

The section on gout adds nothing to common knowledge. It is curious that the British spas where gout has been successfully treated for centuries are not mentioned whereas certain continental spas of less importance in this respect are approved. The section on spondylitis is scanty—the so-called von Bechterew type is regarded as the osteoarthritic form which is not the view held by most of those who have referred to von Bechterew's original description.

The book is well got up and the illustrations are good. It will be found a useful and practical guide to the management of a common but difficult group of diseases and though it is sketchy in parts a very full list of references is supplied.

Early Science in Cambridge

By R. T. GUTHRIE, M.A. Hon. LL.D. Curator of the Oxford Museum of the History of Science, Oxford. Published by the author at the Old Ashmolean, Oxford, 1937. Pp. 513. 42s.

DR GUTHRIE has earned everyone's gratitude by what he has done for the Old Ashmolean Museum and for the series of books on early science in Oxford which he has published. He now turns his attention to Cambridge. His work is not a formal history but as he says more a series of notes centring round a list of surviving instruments which have been associated with teaching and research in Cambridge many of which were shown at an exhibition in the Old Schools in 1936. It is full of interest and if we fail to find something which we might expect we come across a great deal which is surprising. How those who discuss the curriculum must envy the education which William Stukeley got about 1703. We hunted after butterflies, dissected frogs, used to have set meetings at our chambers to confer about our studies, try chymical experiments, cut up dogs, cats and the like. A small wonder that when he reached the dignity of Goulstonian lecturer he had risen to dissecting an elephant. Or read of the wise royalist Dr Bowles who having to treat for a dysentery a roundhead captain who had been tearing up prayer books, cured his patient by a decoction of the prayers for the visitation of the sick from the defiled volumes boiled in milk. No very clear distinction seems to be made between work done in Cambridge and work done elsewhere by Cambridge men and there are we suspect a fair number of small inaccuracies but we can heartily commend the book for casual reading. It will probably incite many journeys to Cambridge to see such things as Charles Darwin's red handkerchief draped over the microscope he used to use and to residents will no doubt be quite a revelation.

Milk Products

By W. CLYDE HARVEY, M.D. D.P.H. Medical Officer of Health, Southgate and H. HILL, Sanitary Inspector, Southgate, London. H. K. Lewis and Co. 1937. Pp. 387. 16s.

THE milk products described are ice-cream, cream, butter and margarine, cheese, condensed milk, evaporated milk, dried milk, and some subsidiary milk products such as fermented milks and malted milk. The subjects are dealt with on a regular orderly plan which is convenient and easy to follow: a definition, food value, bacterial content and their sources, manufacture, any diseases transmitted by the particular food, chemical composition, bacteriological and chemical examination, legal position and where appropriate any legal or recognised standards. The balance between these different sections is for the most part, well maintained. Ice-cream is fully

discussed—this chapter occupies 84 pages—while evaporated milk might have been given a little more space. Very little of importance is omitted but no mention is made of staphylococcus food poisoning in connexion with cream filled pastry, a matter of increasing importance. No colour tests are given for the presence of vitamins added to margarine, indeed, the chemical examination of margarine seems to be omitted. The difficulty of making a satisfactory injection emulsion for examining cheese for tubercle bacilli is not dealt with. Under the heading sweetened condensed milk the hydrometer is given as the only instrument whereby the progress of concentration can be determined, the use of a viscometer is not mentioned. Emphasis might have been given to the importance of the retainer in connexion with the moisture and bacterial content of dried milk.

Much of the information given is not readily accessible elsewhere and the authors have done a considerable service in making it available in this well written and convenient form.

Hospital Law Notes

By W E C BAYNES, M A, LL M, Barrister at Law. London. Joint Council of the Order of St John and the British Red Cross Society 1937. Pp 93 5s.

Mr Baynes, who is honorary legal adviser to the British Hospitals Association, has found that the same questions are repeatedly put to him by secretaries of voluntary hospitals. He has therefore collected for publication the notes on points of law which form the substance of his replies. They cover almost every conceivable legal or semi legal difficulty which a hospital secretary is likely to encounter. There is an adequate index and footnote references are given to the principal leading cases. The allusions to the National Health Insurance Act of 1924 need to be adjusted to the consolidating statute of 1936. Similarly in the note on infectious diseases the references on pp 21 and 22 to the public health enactments of 1875 and 1925 and the Infectious Disease (Notification) Act of 1889 will need to be replaced next October by references to the equivalent provisions of the big new Public Health Act, 1936, which Mr Baynes cites at p 55 as if already in force. These, of course, are minor points, the law is accurately stated but the statutes where it is now to be found have been rewritten in the past twelve months. The notes on road accident patients, on the recovery of income tax under subscribers' seven year covenants and on liability for negligence are good instances of the clear and concise help which Mr Baynes offers to his readers. The secretaries of hospitals and similar institutions who buy his little book will get good value.

War Dance

A Study of the Psychology of War By E GRAHAM HOWE, M B, B S Lond, D P M London. Faber and Faber 1937. Pp 315 7s 6d.

It is no indictment of Dr Graham Howe's work to state that his thesis is a search for a mystical solution of the problems of human behaviour. War represents one of the types of disharmony which can, he holds, be overcome by the same methods which he has attempted to expound in earlier books ("I and Me," and "Morality and Reality")—i.e., by a resolution of the antinomies in the self—the duality of inner and outer, private and public, cognitive and conative thinking and spontaneous living. Dr Howe enjoys

similes and aphorisms (some penetrating, others singularly impenetrable) carrying the reader along in a pleasant flow of bright ideas and dark sayings. But as one reads on, it seems that one has not progressed in a stream, but raced in a whirlpool. Dr Howe has been unwise, perhaps, to invoke the Fourth Dimension. Of course, if we could be in all dimensions at once, woefully as we are tied to three (and quite incapable of living in one or two) reality would certainly be revealed to us. But here we must use mathematical notation and not surrealist (polite variety) drawings which do not, for most people, clarify the issues. Dr Howe would have succeeded better, indeed perhaps brilliantly, if he had chosen another title. For he has said little about war and the reader is left with the impression that "c'est magnifique, mais ce n'est pas la guerre."

British Journal of Children's Diseases

(Vol. XXXIV, April-June).—In an article on Epidemic Myalgia in Children, Dr W N Pickles reviews the literature and records his experience of an outbreak of 31 cases which occurred in Wensleydale, Yorkshire, in the summer of 1933, 15 were in children under 11 years of age, 15 in young adults, and one in a man of 52. His conclusions are as follows. The disease appears to spread by direct contact, and the incubation period is short, ranging from two to four days. The period of infectivity continues during the course of the disease which is also short. There is no evidence that the disease is conveyed by food, water, or animal vectors. It occurs mainly in the late summer and autumn. One attack does not confer immunity. The chief importance of the disease which has good prognosis is its tendency to simulate serious conditions such as acute pneumonia and acute abdominal emergencies, especially appendicitis and intussusception. In his paper on Morbilli Bullosi Dr G W Ronaldson, who records two personal cases, one in a girl aged 4 years who recovered, and another in a female infant of 10 months who died, illustrates the rarity of this condition by the fact that they were the only examples of morbilli bullosi in a series of 4362 cases of measles admitted to the South Eastern Fever Hospital in the period 1930-36. Ronaldson maintains that morbilli bullosi should be defined as a variety of the measles exanthem and not as a distinct variety of the disease. He classifies the reported cases into one or other of the following three groups: (1) cases in which a bullous eruption was associated with a morbilliform erythema, (2) well-authenticated measles with an eruption which had pemphigoid elements, of which his two cases were examples, and (3) cases of measles in which a bullous eruption followed the true rash either immediately or after varying intervals.—Dr E F Dawson Walker and Dr E G Brewis contribute a paper on Two Unusual Cases of Diphtheria. The first was a case of a severe naso-pharyngeal form of the disease in a female infant aged 9 days. Recovery followed two intramuscular injections of antitoxin. Nasal and faucial swabs showed *C. diphtheriae* of the intermediate type. The second case was that of a boy 12 years old who developed chorea in the course of characteristic diphtheritic paralysis, and recovered. Similar examples of this very rare complication of diphtheria have been recorded by Globus (1923), Critchley (1921), and Mühlentkamp (1934).—Dr D MacIntyre and Dr H L W Beach report a case of Acute Encephalomyelitis Complicating Chicken Pox. The patient was a girl aged 7 years, in whom the complication developed on the twelfth day of an attack of chicken pox. Complete recovery took place without any special treatment in the course of three months, and when seen about eight months after discharge from hospital the child showed no sign of mental or physical weakness.—The abstracts from current literature are devoted to acute infectious diseases.

THE LANCET

LONDON SATURDAY JUNE 12 1937

WAGES AND HEALTH

THE prospect of a declining population was recently reviewed in our columns¹. It may be as some of the writers on the subject contend, that the low and falling net reproduction rate arises rather from psychological than economic causes. Nevertheless those who live below the margin of subsistence have a specially good reason to make increasing use of the contraceptive measures now at their disposal and so accelerate the fall. Science has given the poverty stricken a practical answer to the assumption that their continuance in that state is inevitable if regrettable feature of the social system. They can now die out of their own volition. Whether the prospect of a falling and ageing population is a matter for alarm or not, there are students of economics who maintain that there is no reason why the extreme forms of its economic origins should continue. Mr SELWYN ROWNTREE has recently rewritten his book first published in 1918 on the Human Needs of Labour - His basic facts are derived from a survey of 2875 completed families in the town of York - families completed in the sense that the mother was aged 40 to 45 years at the date of the 1931 census. He has been able to trace the number of dependants in different sizes of family from year to year since the eldest child was born. It gives reason for believing that York is a fair sample of the country, but admits that his investigation is too small to yield absolutely conclusive results. Of these families 17.7 per cent had no children, 25.1 had had a maximum of one child, 24.2 two children and 14.7 three children simultaneously dependent at some time, the percentages rapidly diminishing for larger maximum dependents. The percentages of children in the families arranged in the same order of classification but excluding the childless families were 34 for one child, 24.02 for two children, 21.03 for three children and so on dependent at any one time.

Mr Rowntree's line of inquiry is designed to explore the problem of a living wage and it shows that if such a bare minimum were to be based on the needs of families with children only, 63.6 per cent of the children of fathers receiving it would be inadequately provided for at some time and 68.8 per cent would be in that condition for five years or longer. Even the minimum wage were determined on the needs of families with three children, 42 per cent of children of all sizes would be inadequately provided for over varying

periods, and 34.5 per cent for five years or more. In his view a minimum wage is necessary and practicable. It should be fixed on the needs of a man, woman and three children, the requirements of larger families at low income levels being met by the admittedly difficult provision of State family allowances. In endeavouring to determine such a wage he uses average retail and other prices of his own ascertainment applied to the estimated needs of a family of five persons. As regards food he has been guided by the dietaries contained in

Family Meals and Catering published by the British Medical Association giving 3400 calories per man for a family equivalent to 3.76 adult males. In this way he builds up a minimum wage of 53s per week, including 20s 6d for food, 9s 6d for rent, 8s for clothing, 4s 4d for fuel and light, 1s 8d for household sundries and 9s for personal sundries. Mr Rowntree has been publicly criticised by the Children's Minimum Council² for the meagreness of his dietary but he has been careful to state that he has deliberately erred on the side of stringency rather than extravagance, that even this wage (or its equivalent of 41s in the case of agricultural workers) would be a great advance on anything earned by a large proportion of workers at the present time, and that his experience on a trade board leads him to believe that its gradual but reasonably rapid application to all industries would have no crippling results. He is aiming at the bare subsistence necessary for health and well being not at an income above the level of which they could not be improved.

If this minimum income of £137 10s per annum for industrial workers is accepted it would be important to know how many families are maintained below this level. Thus, unfortunately, it appears to be impossible to ascertain with anything approaching accuracy. A general impression, however, may be gained from official figures and from estimates made by various writers. In their latest book³ G. D. H. and M. I. COLE paint a picture of our society on a much wider canvas than Mr Rowntree's, bringing together data gathered by experts about national and class incomes, nutrition, housing, unemployment, education, standards of life, social services, taxation, production and the past and prospective struggles of working men for better conditions. The facts are as near the truth as the available methods of scientific investigation permit whatever may be our view of the remedies proposed by the writers. In May 1936 there were nearly one and a half million males unemployed of whom more than one million were over 25 years of age. Some of these were certainly unmarried and many at such an age that their families had ceased to be necessarily dependent, but it is well known that a large number have a wife and three or more young children to maintain. Unemployment benefit for such a family is at the rate of about £78 a year for the chronic unemployed who come under the Public

¹ *Lancet*, April 11th 1937, 233, 911.
² London: Longman, Green and Co., 1937, 162, 2s. 6d.

³ *The Condition of Britain*, May 1937, 1st 4s. 6d., 2nd 7s. 6d. London: Victor Gollancz, 1937.

Assistance Board it may be higher according to circumstances but, in any case, usually it is less than £100. When to those groups are added the families who are entirely dependent upon local poor-law assistance, usually at comparable rates, it is evident that many of the non earning families in the community have far less to live on for prolonged periods than the estimated subsistence wage. As to those who are earning, it appears from estimates of COLIN CLARK, quoted by the COLES, that more than 60 per cent of the national incomes in 1929 (i.e., before the financial crisis) were below £125 per annum and, indeed, that the average of all incomes was below £200 per annum. It should be remembered that more than one income may be represented by one family, there are, in fact, more than twice as many incomes as there are families. Nevertheless, it is clear that many young families dependent on a single wage earner must fall into the lower earning categories. Knowledge of local families and their wages indicates that this is the case.

If, then, scientific work on nutrition and the inquiries into the costs of commodities are anywhere near the mark, the volume of those who are inadequately fed must be large. The Government has recognised this position by urging local authorities to make fuller use of their powers to provide free or cheap meals and milk for children, and for expectant and nursing mothers. In recent years the urgent need for an outlet for the surplus production of agriculture has provided a new incentive to the governments of all countries represented at Geneva to arrive at an international policy which will increase the consumption of food. In the meantime, there is scope for further intensive inquiries into local family incomes, such as those included in the London and Merseyside surveys and in MCGONIGLE'S investigations at Stockton. Possibly the survey to be carried out by the Ministry of Labour in connexion with the cost of living will afford information covering a wider range of the population than any data at present available. The needs of people can only be estimated roughly but actual incomes should be ascertainable with a reasonable measure of precision.

BATHING AND THE EARS

As summer weather has now happily arrived, we may expect the usual crop of ear troubles due to bathing. Man is not an aquatic animal and, unlike many mammals that have reverted to a life in the water, he has no mechanism for closing the auditory meatus or the nostrils, hence water can reach his ear either through the meatus or through the Eustachian tube, though harm is rare in proportion to the number of bathers. Water easily gets into the meatus during swimming and produces a disagreeable sensation, but it soon runs out again from an unobstructed canal. If, however, there is any considerable quantity of wax, this imbibes the water, swells, and obstructs the passage so that the sensation of water in the ear, persisting long enough to cause the sufferer to seek advice, is nearly always caused by

cerumen and cured by its removal. Those who secrete much wax should have it removed before the bathing season. This retention of moisture readily leads to a dermatitis and is the usual cause of external otitis resulting from bathing. Apart from the presence of wax, those with a tendency to eczema are apt to suffer an exacerbation from bathing, such people should wear an efficient plug and dry the ears carefully afterwards, they may with advantage insert a few drops of oil or of nitrate of mercury ointment (1 drachm to an ounce of equal parts of olive oil and liquid paraffin). In some tropical regions, a very severe form of external otitis is a common complication of bathing apparently caused by minute larval forms of marine organism, "Bombay ear" and "Singapore ear" are well-known examples.

Much more important than external otitis is the middle ear suppuration that may result from bathing. One important cause of this is the entrance of water through an old quiescent perforation of the drum—an event liable to be followed by very severe suppurative otitis and the danger of serious complications. Patients with an open perforation should never bathe without using really efficient means for preventing the entry of water into the ear. A plugging material, made of a mixture of animal wool and plasticine or wax, is obtainable at chemists and is satisfactory if intelligently applied but ordinary cotton wool is worse than useless since it only gives a false sense of security, a rubber bathing cap to cover the ears should be worn over any plug. Unfortunately, people with perfectly healthy ears, too, may get acute otitis media after bathing, owing to the entrance of water into the tympanum through the Eustachian tube. This occurrence is assisted by swallowing and, more frequently and particularly, by forcibly blowing the nose while the nasal passage is still full of water. If the public could but be taught to refrain from blowing the nose until the water has drained out of it, otitis media after bathing would become rare. Patients with otitis from bathing very often give a history of a sudden crack and pain in the ear on blowing the nose, followed soon by earache. The ear is peculiarly susceptible to infection by micro organisms as introduced, and although of late much care has been devoted to the purification of swimmingpools and baths, these may play an important part in the spread of streptococcal infections when, in a school, such diseases as rhinitis and tonsitis are present. Epidemics of nasal sinusitis have also had a similar origin. But infection of the bathing water is not an essential condition for organisms from the patient's own throat or nose may be carried with the water along the Eustachian tube. Otitis media from this cause is naturally more likely during an attack of coryza or sore throat and bathing should be avoided by people thus afflicted.

In conclusion, may be said that when the external meatus and drum is healthy, plugging the canal is unnecessary except to prevent direct damage in high diving. The subject of a perforated drum runs a substantial risk from the entry of

water and must be very careful to exclude thus if he bathes at all. A healthy drum can only be infected through the Eustachian tube and this is unlikely if the bather refrains from swallowing while in the water and, especially, from blowing the nose on coming out and if he does not bathe while he has a cold or a sore throat

ELEMENTS OF POPULATION

IF the predictions of both amateur and professional soothsayers are even reasonably near the truth the future of our population is a question likely to remain in the public eye for quite a long time. The basis of these predictions is of course the present level of fertility and mortality with various adjustments made to each according to the worker's idea of what may happen to those rates in years to come. One and all are agreed that (apart from immigration) our population must within a few years begin to decline and unless there is a considerable increase in the birth rate to decline at an accelerating rate. And so the question arises as to whether anything can be done to check a further decline in fertility whether with the aid of a Royal Commission the urge to contraception cannot be stayed. Most but by no means all competent observers believe that the fall in fertility is mainly if not entirely due to deliberate control of the size of family. But clearly contraception is only a means to an end and it is the basic causes that lead to the adoption of the means that we want to know more about. It seems a far cry from Royal Commissions and planned families to fruit flies and flour beetles but as RAYMOND PEARL, a pioneer of the experimental approach in this field has recently emphasised¹ the fundamental problems of population are biological problems. What for instance is it that makes populations slow up in their growth rate and approach ever nearer to a limiting size which they never quite reach? What is the explanation of the phenomenon of periodic rapid multiplication of populations of lower mammals of which lemmings are the classic example? Are there laws of population growth by which man as well as the lower animals are bound so that the best laid schemes of committees can have little effect upon his development? The sociologist the experimental biologist and the ecologist must play their part in solving such problems none of them can succeed in doing so alone.

The experimental method has already given results of much interest. For instance several studies suggest that groups of insects survive the effects of various environmental poisons more easily than do isolated individuals. These have shown that morphological changes may take place under certain conditions of crowding. The factor which has had most attention paid to it is density and a very interesting discussion of its influence has been published² by Dr THOMAS PARK of the department of biology of the school of hygiene and public health Johns Hopkins

University. PEARL's work on *Drosophila* is well known, it shows the inability of this fly to oviposit and feed adequately when disturbed and this provides evidence that population density may alter the behaviour of its components. Less familiar perhaps are the experiments which PARK quotes of various workers with *Tribolium confusum* a beetle which spends its entire life cycle in flour. Here also a limiting size to the population in relation to its environment has been observed. These beetles eat their own eggs and this cannibalism varies directly with the number of eggs and imagoes present so that when the concentration of the latter is high the rate of cannibalism is high. Also, flour in which dense populations of *tribolium* have lived has its nutritive value reduced and is affected by the addition of excretory and metabolic wastes. It has been shown that beetles living in this conditioned flour have their fecundity drastically lowered and their larval mortality increased. It thus seems that an environmental modification takes place which is a result of the activity of the population itself and this modification plays an important part in guiding the course of the *tribolium* population. PARK also quotes the work of MACLAGAN and DUNN³ on the grain weevil *sitophilus* which shows decreased fecundity with increasing density, which seems to be due, as with *Drosophila*, to reduction of the times available for feeding ovipositing and resting, which caused adverse effects upon the physiological processes of reproduction.

Such studies as these are still adding to the little we still know of insect populations and the underlying principles of their growth. Of mankind we know perhaps even less. PEARL's interpretation of the scanty data seems the most reasonable—that for thousands of years the human population of the earth grew slowly till some 300 years ago the development of scientific discovery (including exploration as well as technology) suddenly expanded man's effective universe and has kept on expanding it. There has followed a spurt of population growth of an explosiveness that is seen when plotted to a proper time scale to be comparable to that of an epidemic. This history PEARL compares with what we know of the lemming. The essential biological elements he suggests are these: first a population relatively constant or very slowly growing as a consequence of the operation of natural check; secondly during a relatively short period on the total time scale of the species these checks are abated and a large expansion results; thirdly the increasing density leads to disturbance reactions and lastly these reactions lead to undirected mass migratory movements and ultimate destruction of major parts of the population. Up to a point there seems to be a parallelism in the history of mankind. Unrest is a dominant characteristic of human behaviour to-day perhaps a symptom of discomfort associated with density. Not being a prophet PEARL does not envisage mankind

¹ Amer. Nat. 1933 71 50
1934 1

² Proc Roy Soc Edinb 1935 58 126

marching to a watery grave just behind a horde of frantic lemmings. But does anyone," he asks, "find it difficult to conceive of man marching off in the not too distant future to a war? Or to doubt that, once well started, that war will entangle in its meshes the major portion of mankind before it is finished? Or, finally, to doubt that the next world war will achieve a destructive-

ness hitherto undreamed of in the wildest flight of imagination?" The thought is not a cheerful one, perhaps, as PEARL admits, it is essentially false. But the problems of population are difficult and serious, nothing but good can come of each form of attack upon them while general discussions such as PEARL has published merit thought and attention.

ANNOTATIONS

THE CAPITATION FEE AWARD

THE court of inquiry into the insurance capitation fee met at the Ministry of Health on four successive days from May 26th to 29th when Dr H Guy Dam presented the case for the Insurance Acts Committee of the British Medical Association and Mr T D Harrison presented the case of the Ministry of Health and of the Scottish Department of Health. The Medical Practitioners' Union and the Joint Conference of Friendly Societies also gave evidence. At the conclusion of the inquiry Lord Amulree, the chairman, expressed the court's high appreciation of the cases which had been presented so fairly by the parties concerned and added the hope that the decision the court would presently announce would give satisfaction. After an interval of a week the finding of the court was published on Monday last to the effect that the appropriate capitation fee should remain 9s the figure applying both to insured persons over the age of 16 and to employed adolescents under 16 when they become legally entitled to medical benefit. The Minister of Health in making the announcement adds that the introduction of legislation to entitle boys and girls to medical benefit immediately on becoming employed (on reaching the school leaving age) has awaited this decision. It will now be possible to introduce the necessary Bill.

VARICELLISATION

ALTHOUGH a mild disease, chicken pox is a troublesome one, especially in children's wards and schools, for it is very infectious, has a long incubation period, and may take a long time to heal completely. Satisfactory means of prophylaxis are still to seek, isolation and quarantine, however prompt, are seldom wholly successful if the susceptible contacts are young. Specific prophylaxis by injection of the pooled serum of convalescents has had very equivocal success, the age groups of the children exposed, the degree of exposure and especially the variability of the antibody content of the samples of serum which composed the pool may account for the failure of one experiment or the apparent success of another. The suggestion of Amies¹ that by means of agglutination reactions it may be possible to select sera of high antibody content instead of pooling samples of unknown titre may form a sound basis for future work. Lastly there is varicellisation, the counterpart of variolation and its contemporary since, as I D Rolleston,² points out it was first employed by William Heberden the Elder in 1767. Rolleston remarks that "in striking contrast with small pox, the results of the inoculation of chicken pox have been remarkably inconstant. Willan was unsuccessful at the beginning of the nineteenth century. Steiner, however, seventy years later was more fortunate

and since then occasional successes have been reported by other workers." Some of these are mentioned by Prof J W Bigger,³ who gives details of the apparently successful varicellisation of his daughter by means of the intradermal injection of the contents of vesicles derived from his son. During the 48 hours before the appearance of the boy's eruption (and therefore during the most infective phase of chicken pox) the young adult sister had been in close contact with the school boy brother. One insertion was made into the girl's forearm, of the fluid—a minute quantity—collected from five vesicles and suspended in saline. On the eighth day after inoculation the site was slightly red, next day a definite papule was present, and 24 hours later this had become a vesicle indistinguishable from a lesion of chicken pox. There was no pyrexia or constitutional disturbance, the local lesion disappeared in a few days, and no generalisation took place. As to the duration of immunity Dr Bigger expresses no opinion, but it may be said that in some at least of the recorded examples immunity was temporary, although the clinical attack following a subsequent exposure was mild. It is clear in any case that the method, like the long abandoned variolation, is unsafe for general employment, familial protection is another matter. Dr Bigger's only anxiety was, he says, the possibility of producing herpes zoster. The intradermal inoculation employed by him appears preferable to the puncture or scratch insertions used by others.

NUTRITION AND INFECTION

IN reviewing the latest report of the Foot and Mouth Disease Research Committee (p 1290) we remarked that the by products of the research done have a value of their own. One of these by products, which requires further analysis, is the observation by Mr J T Edwards, D Sc, that well nourished rats can be infected with foot and mouth disease more readily than those that are ill fed.⁴ Early workers at the Lister Institute and elsewhere had found that young guinea pigs, and those in a poor state of nutrition, are more liable than others to resist this infection, and since 1932 experiments have been done at the Lister Institute and the Pirbright Experimental Station to decide how far these differences of reaction are due to nutrition and how far to size, age, race, or to other conditions. Rats were used for most of the experiments because they are not easily upset by changes of food. They were divided into groups and each group was inoculated intradermally with virus after a period on a particular diet. The two factors found to influence susceptibility and severity of illness were age and nutritional state. Very young and very old animals and those

³ Bigger J W. *Irish J med Sci* March 1937 p 126.

⁴ This observation was mentioned by Dr Edwards at a sectional meeting of the Royal Society of Medicine reported in our issue of April 3rd p 811. Details are given in the Committee's report (pp 190-223).

¹ Amies C R (1933) *Lancet* 1 1015.

² Rolleston J D (1937) History of the Acute Exanthemata, London.

which were ill nourished were relatively insusceptible—a finding which applied, though less definitely to guinea pigs and hedge hogs as well as to rats. A third factor which lessened susceptibility was concurrent infection possibly by lowering the general state of nutrition. Whether any one component of the diet is especially concerned was not determined, but it was noted that addition of raw liver appeared to increase susceptibility within a few days. If the rats then went back to a less nutritious diet it was more than three months before they lost their abnormal susceptibility to inoculation—a finding that could be explained by suggesting that a pro infective factor in the liver was stored in the animal. The decreased susceptibility of the rats on an inadequate diet was found to be associated with the presence of a definite anaemia and the addition of liver to the diet may have acted by correcting this. Whether these observations apply to farm animals has not been investigated, but Dr Edwards gives a chart showing that in India foot-and-mouth disease in cattle is commonest at the time of year when fodder is plentiful and the animals are in prime condition and is comparatively rare in the hot weather when they are often grossly undernourished.

OPIMUM SMOKING IN THE FAR EAST

ON April 22nd what is known as the Bangkok Agreement on the Suppression of Opium Smoking in the Far East became effective and another stage was reached in the effort to control or restrict narcotic addiction by inhalation. By the Hague Opium Convention of 1912 the contracting powers engaged to take measures for the gradual and effective suppression of the manufacture of internal trade in and use of prepared opium—i.e. opium to be used for smoking. They also undertook to prohibit the import and export of prepared opium, moreover those powers which were not then ready immediately to prohibit such export undertook to do so as soon as possible. Little however was done in this direction and indeed the Geneva Conference of 1925 having registered the opinion that smuggling in the Far East hampered effective suppression as had been contemplated agreed by protocol to postpone the measures undertaken in 1912 until a period of not more than 15 years from a date by which the obstacle referred to had been removed. A commission of three visited the Far East and reported in 1931 to a conference at Bangkok on the situation as then disclosed. The agreement then arrived at provided for the retailing and distribution of opium for smoking to take place only from Government shops or under Government supervision. Smoking under 21 years of age is prohibited and prepared opium may be sold by the Government monopolies for cash only. Licensing, rationing or registration of smokers is provided for. Penalties for offences are prescribed and provision is made for research as to the effects of opium-smoking and means to facilitate its cure. Reports are to be made annually to the League of Nations and a special opium revenue account is to be kept.

The agreement which has now come into force has been ratified by all the Governments parties to it—viz. the United Kingdom for the Malay States and Hong Kong, Burma, the Netherlands for the Netherlands Indies, France for Indo China, Siam, Portugal for Macao and Japan for Formosa and Kwantung. It will be remembered that the commission of inquiry felt that opium smoking could not be dealt with apart from opium-eating and recorded their opinion

that the radical method of dealing with illicit traffic in opium is by controlling effectively the cultivation of the poppy. This fundamental question of the limitation of the production of the raw materials is now at long last, under instruction of the Council and Assembly engaging the attention of the League of Nations.

THE PHARMACEUTICAL SOCIETY'S NEW HOUSE

THE Council of the Pharmaceutical Society has approved the architect's plans of a new building for the society's headquarters. The site which has been acquired has a main frontage in Brunswick-square of 237 feet and a minor frontage in Hunter-street of 113 feet. The architect is Mr Herbert J. Rouse of Liverpool, he built Martin's Bank Building in that city and other edifices which have attracted admiration. The structure provides six floors of accommodation above the street level with general service rooms of all kinds in a basement. By the use of separating courts for light, three wings are provided each enjoying a maximum light exposure on three of their sides. The plans of the third, fourth and fifth floors show that continuous depths of laboratory accommodation are provided along the whole length of the front served by corridors lighted from the courts. The school of pharmacy occupies the whole of the third and fourth floors together with the portions of the ground first and second floors which make up the east wing of the building. The fifth floor is utilised for pharmacology including a nutrition department. The assembly hall, library and main lecture theatre occupy the centre of the ground and first floors and the council suite is placed centrally on the second level. On the ground floor a lofty vestibule at the entrance is flanked on the right and the left by the assembly hall and library respectively while directly facing the vestibule is a lecture theatre to seat 250 persons. The assembly hall itself extends over the height of two ordinary floors and will seat 400 persons. The library is also a room of two floors in height and is planned with bays in which are placed small tables for reading. The west wing is devoted to the publications and editorial department. The estimated cost of the building is £200,000.

CONDITIONED DEFICIENCY DISEASE IN ANIMALS

IT is now known that man may suffer from many deficiency diseases even when his diet is in every way adequate. The fault lies in defective gastro-intestinal function which prevents the use of the food by the body—in other words there is a conditioned deficiency. In Addisonian pernicious anaemia lack of the haemo-poietic principle is due to a failure on the part of the stomach to secrete the intrinsic factor. In hook worm anaemia though the diet is often deficient the presence of parasites is held by some to play some part in preventing the proper utilisation of iron. Important studies of a wasting disease in sheep known as Border pining recently made by W. J. Stewart and his colleagues suggest that this may also be a conditioned deficiency disease due to parasites. That pining was in some way due to diet was suggested as long ago as 1831 by James Hogg the Ettrick shepherd because he found that it was improved by changing the pasture. Since its most characteristic feature was a severe anaemia it was formerly considered that it was due to a lack of

¹ Stewart W. J. and Merry E. S. (1933) *J. comp. Path.* 43, 137.

iron in certain pastures. It was found that iron content of pastures was on the whole lower in pining areas than elsewhere. On the other hand, in the Border country at least, the provision of iron containing licks for sheep has not been effective in preventing the disease. Stewart and his colleagues therefore undertook a further study,² of the condition and have made interesting observations. The constant symptoms are emaciation and an anæmia that appears to be normocytic in type, both red cells and hæmoglobin being equally affected. This might in itself suggest that lack of iron alone is not the cause of the disease since simple iron deficiency anæmia is usually hypochromic. Examination of the faeces showed a higher proportion of ova in pining sheep than in normal controls, and the egg index varied inversely with the severity of the disease and the intensity of the anæmia. Nematode parasites were found post mortem in the stomach and intestines of all sheep examined, the largest number being present in animals seen during the summer, when pining is at its worst. In 13 cases there was damage to the gastric mucosa, the typical lesion being a thickening and roughening of the membrane. Stewart believes that the sheep surviving a summer attack of pining remain in poor condition and often die of malnutrition and broncho pneumonia during the winter. At this stage the parasites may be few and post mortem examination may fail to give conclusive evidence of the important part they play. This disease at once suggests a possible analogy with hookworm anæmia in man. Damage caused to the stomach and intestines by the parasite, of which Stewart has found histological evidence in the sheep, may result in deficient absorption of iron especially if the amount in the diet is low.

HÆMOPHILIA RECORDS

The clinical history and description of 98 patients suffering from hæmophilia, with a series of 75 pedigree charts, forms the text of a monograph recently published by Dr Carroll Birch.³ It would be difficult to overestimate its value. It supplies such details of a unique series of unselected cases, personally examined, as enable the reader to get an idea of the case to case variations in the course of the disease and of the accidents to which individual sufferers may be subject. Particulars of 113 cases of death in hæmophiles are given, showing that no fewer than 57 per cent of the persons affected died during the first five years of life. Dr Birch finds no uniformity in the variation in the severity of the disease at different periods of life, some patients appear to have more severe and more frequent hæmorrhages as they grow older, of others the converse was reported. Many factors may contribute to fluctuation in the severity of the disease at various periods during life. The pedigree charts will be welcome to geneticists, only those who have attempted the investigation of family histories can fully appreciate the labour involved in this section of the monograph. Pedigrees worked out as a routine measure, in every case of a disease seen, have not only their own particular interest but reveal much about the genetical character of a condition which can only be discovered from material collected in this way. Discussing the occurrence of hæmophilia and colour blindness in different members of the same family, Dr Birch

writes that the combination of these two anomalies in one male is theoretically impossible. Geneticists are likely to question this statement—indeed, several pedigrees have been recently published which demonstrate a very close linkage between the two conditions in certain families.

Good pictures and diagrams illustrate this monograph and Dr Birch deserves thanks for a valuable contribution to the subject of hæmophilia.

PLANTAIN HAY-FEVER

In a group of 180 sufferers from hay fever Blumstein and Tuft¹ found 14 (7.7 per cent) who were sensitive to plantain pollen, and among 70 cases of spring hay fever there were 5 in which plantains appeared to be the sole exciting cause. The observations recorded suggest that the "English" narrow leaved and the "common" broad leaved plantain—the lesser and the greater plantain respectively—contain a common antigenic factor quite distinct from that found in Timothy grass or ragweed. The dry pollen nasal test was found to be an invaluable aid to the diagnosis of plantain hay fever and Blumstein and Tuft believe that intractable cases of spring hay fever will often yield to treatment if plantain extract is included in the injections of grass pollen extracts.

THE RISE OF THE TUBERCULOSIS DISPENSARY

Fifty years ago a young graduate started in three small rooms at 13, Bank street, Edinburgh, the Victoria Dispensary for Consumption. When he founded it Dr Robert Philp, as he then was, probably did not himself realise what a world wide development of the antituberculosis organisation he had inaugurated. There are times in the history of most movements when an entirely new idea is conceived and progress is rapid, and there are times when the movement settles on its lees and becomes stagnant. The years 1882 to 1887 were a turning point in the history of the fight against tuberculosis, and Sir Robert Philp, looking back upon it after fifty years, may well be proud of his share in it. The period which preceded it marks the growth of the special voluntary hospitals. Beginning with the foundation of the Royal Chest Hospital in 1814, some sixteen hospitals for tuberculous diseases had been founded in the British Isles by the time the Victoria Dispensary saw the light. Some of them came into being for the purpose of helping the patient with advanced disease whose lot, with nothing but the old poor law infirmary to look forward to, was gloomy in the extreme, others, regrettably few in number, definitely set out to treat incipient consumption. But whether the early or the advanced case was the object the conception of the hospital was the sick person and him alone. The outstanding advance of the dispensary movement has been not merely the picture of a patient with physical signs but the realisation of the sick and infective person in his environment of home and community. From this time onwards there has been a new conception of tuberculosis, a chronic infective disease in its setting of family and immediate surroundings. And with this new conception came the idea of the contact and the search for the primary case in each family focus of infection.

Philp's ideas were only slowly followed up and Great Britain the country of its birth, had to

¹ Stewart, W. L. and Ponsford, A. P. (1936) *Ibid.* 49, 49.
² *Hæmophilia: Clinical and Genetic Aspects*. By Carroll L. Birch. Illinois Medical and Dental Monograph, Vol. I, No. 4. Published by the University of Illinois Press, 1937.
 Pp. 151. \$2.00.

³ Blumstein, G. I., and Tuft, L. *J. Amer. med. Ass.* May 1st 1937, p. 1500.

wait until the report of the Astor Departmental Committee in 1912 before the dream of its founder was realised. Flick has pointed out that the period of voluntary hospital development in this country saw a marked decline in tuberculosis mortality. In 1848 the death rate was 2.07 per 1000 living; in 1888 it had fallen to 1.54. Now it has been nearly halved again and although these declines in mortality cannot be attributed to any one agency there can be no doubt whatever that the dispensary movement has justified the faith of its founder.¹

IN DEFENCE OF RESEARCH

Prof. G. Grey Turner, professor of surgery in the University of London at the British Postgraduate Medical School, who has recently been elected a vice-president of the Research Defence Society, will deliver the eleventh Stephen Paget memorial lecture at the annual general meeting of the society which is being held on Tuesday, June 15th at 3 P.M. at the London School of Hygiene and Tropical Medicine, Keppel-street, W.C. Prof. Grey Turner will speak on what research owes to the Paget tradition and the chair will be taken by Lord Lamington, president of the society, who will be supported by Sir Arthur Stanley and Prof. A. V. Hill, F.R.S. Members are invited to bring their friends to the meeting. The society may be addressed at 11 Chandos-street, Cavendish-square, London W.1.

INDUCTION AS A ROUTINE

Mathieu and Holman² of Portland, Oregon, compare the results in some 750 consecutive cases in which premature labour was induced, with those in another 750 contemporary cases in which the onset of labour was left to Nature. A study of these two series should (but may not) leave the reader convinced that no woman ought to be allowed to go into labour spontaneously. In the series in which induction was performed, the maternal mortality (one death) was half what it was in the other group while the fetal mortality (corrected) was in the same proportion. The length of the first stage of labour was considerably diminished in the induced series and there was no difference in the morbidity rate. The method of induction used is said to have been completely successful. At 7 A.M. an enema is given followed at 7.30 by a variable dose of pentobarbital. The patient is asleep in half an hour, and pituitary extract in 3 minute doses is injected at half hour intervals afterwards. If labour has not started after the third or fourth injection and the membranes are still intact, they are ruptured artificially. (It should be noted that this is not advised if there is a malpresentation or if the fetal head is not engaged.) The injections of pituitary extract are then continued until the patient is definitely in labour. In Mathieu and Holman's series there were no untoward results—no pituitary shock, no premature separation of the placenta, no precipitate labour—and it is somewhat ironical that the only case of rupture of the uterus was in the series of controls in whom labour was not induced. The indications for induction are stated most briefly as those cases which promised trouble: the toxæmia, large babies, contracted pelvic outlet, apprehensive and nervous patients, &c. The results seem to have been excellent yet we are not altogether

surprised that many of the speakers at a meeting to which they were related commented adversely upon the procedure and suggested that it is better to allow labour to start spontaneously unless there is some definite reason for the termination of pregnancy. Be this as it may, certain facts do demand careful attention. The method was employed over a large number of cases and the incidence of complications was negligible. Pituitary extract was used as a routine but in small repeated doses and its administration was stopped as soon as labour pains were established. There was no report of uterine inertia, and this is of interest in view of the attention lately drawn to the high incidence of inertia of the uterus in women in whom labour had been started by the insertion of bougies. The advisability of administering pituitary extract during induction of labour needs further examination.

PASTEURISATION AND THE NUTRITIVE VALUE OF MILK

The dangers of raw milk as a vehicle for the conveyance of disease are well known and repeatedly emphasised in our columns as well as the safety given by efficient pasteurisation. These are demonstrable facts that cannot be gainsaid, so the opponents of pasteurisation who fear its advent chiefly because of the disturbance they believe it will cause in present methods of distribution have to fall back on the argument that heat reduces the nutritive value of milk. They are apt to talk vaguely of the possible presence of some component that might be affected by pasteurisation but they cannot isolate or define it. A valuable report issued by the Milk Nutrition Committee³ provides no reason for thinking that milk contains any such factor and shows that there is little difference between the nutritive value of raw and pasteurised milk. Further evidence may be found in a report on the nutritive value of raw and pasteurised milk for calves by Prof. Wilson, Prof. Minett, and Mr. Carling.⁴ Their experiment, which lasted over two years, was made with milk from a healthy short-horn herd. Calves as they were born were allotted alternately without any selection into two groups: one fed on the raw milk and the other on the same milk after pasteurisation. Mixed morning milk was used and it was given in measured quantities in strict relation to the weight of the calves. This impartial allocation was not perfectly satisfactory and in fact operated against the pasteurised group because a fewer bull calves happened to be allocated to this group while it included two weaklings who died from other causes. Apart from these two all the animals thrived well and showed no signs of rickets or anæmia. The average increase in weight over the eight week period for the animals in the raw milk group (25 calves) was 53.72 lb. in the pasteurised milk group (23 calves) it was 53.80 lb. Incidentally the highest individual gain among the bull calves and also among the heifer calves was in an animal fed on pasteurised milk. No physical differences could be noted by any observers between the animals in the two groups. Prof. Wilson and his colleagues conclude that there is nothing in these results to suggest that the nutritive value of pasteurised milk for calves is in any way inferior to that of raw milk. Earlier studies have suggested that one effect of pasteurisation is to diminish the availability of the calcium and phosphorus in milk.

¹ A tribute is paid by the Edinburgh medical school to Sir Robert Philip's work in the *Edinburgh Medical Journal* for May 1937.

² Mathieu, C. and Holman, A. *Amer. J. Obstet. Gynec.* Feb. 1937, p. 65.

³ See *Lancet* May 11th 1937, p. 1179.
⁴ Wilson, O. S., Minett, F. C., and Carling, H. E. (1937) *J. Hyg.* 57, 213.

This could have no influence upon its nutritive utility for children, since the need of children for these minerals is less than that of calves, judging by the lower content of calcium and phosphorus in human milk. On the other hand, if the diminution were really substantial it would presumably affect the growing calf, and the fact that it did not do so—which surprised the investigators—makes it clear that this objection to pasteurisation of milk for growing children has no force behind it. Nor, in fact, have any of the other objections, and it is more than time that the medical profession, realising the importance of milk-borne infection, ranged itself solidly behind the demand for a safer supply.

E. L. EHLERS

THE three diseases with which the name of Prof Ehlers is most closely associated are syphilis, leprosy, and scabies. He was president of the Danish Association for Combating Venereal Disease and also for seven years president of the International Union against Venereal Disease. His interest in leprosy helped to make him a great traveller, and he did much to lighten the lot of the leper in many parts of the world, from Iceland to the West Indies. In 1897 he was the organiser of the first International Leprosy Conference, in Berlin, and from 1900 to 1914 he was the chief editor of an international publication on leprosy. His most important contribution to scabies was its ambulant treatment. A welcome visitor in many countries, it was particularly in France that he was known and appreciated. He died on May 6th at the age of 74.

THE PHYSICAL BASIS OF STUFFINESS

RECENT fluctuations from arctic to equatorial climatic conditions should stimulate interest in methods now available for the control of indoor temperature and humidity. The subject was discussed at the Royal Society of Medicine on May 28th (see p. 1401) when special consideration was given to the requirements of ships in the Royal Navy and in factories. In this country, where extreme conditions are rare, regulation of humidity is not usually employed in factories as it is in the United States, attention being concentrated on ventilation, temperature, and the extraction of dust. In a recent article¹ C. P. Yaglou of Boston considers the physical and physiological principles of air conditioning and collects a number of interesting observations. Although the percentage of CO₂ in the air may be used as a convenient guide to atmospheric purity this gas does not in itself produce discomfort in the concentrations ordinarily met with in stuffy rooms, imponderable amounts of organic matter appear to be far more effective in this respect, this observation has the support of experiments on the isolated frog's heart in which it was found that the weakening action of expired air was greater with old and sick persons than with the young and healthy. Dr Yaglou considers that the preference which still exists for window ventilation may be due to the monotony of the air movements produced by mechanical systems of ventilation which are found to be less stimulating than oscillating gusts of air coming through an open window. Dr Bedford's new book² on ventilation contains a chapter on air conditioning

in which a clear account may be found of the apparatus used for filtering, warming or cooling, humidifying or drying atmospheric air. Dr Bedford also notes the importance of organic matter in producing a disagreeably stuffy atmosphere, he quotes a table compiled by Dr Yaglou from which it appears that the number of cubic feet per minute required by a group of people is inversely proportional to the frequency with which they take baths. Thus school children of the poorer class require 38 cubic feet per min. each as compared with only 18 for children in a higher social grade.

AGAINST RHEUMATISM

REMARKING that most services are promoted by the force of public opinion, Capt G. S. Elliston, M.P., at the Margate Congress last month, said that first among the conditions now needing attention is chronic rheumatism. No steps, he said, commensurate with its importance have yet been taken, and he was right. Since he spoke, the welcome news has come of a gift of 10,000 guineas by Mr Alexander Maclean to the Empire Rheumatism Council to finance a rheumatism research unit, together with a promise of a further £2500 from the same source. The Council was constituted last November, when Lord Horder, as president, urged the need for a comprehensive research campaign for which the help of prominent citizens throughout the British Empire would be sought. In congratulating the Council on the success already achieved we take the opportunity of mentioning a modest appeal made some time ago for another and related enterprise. The International League against Rheumatism has done much to inspire the present interest in rheumatic diseases besides maintaining a quarterly journal, an information bureau, and a library; it has held five large congresses in European capitals, in which the medical profession and the governments concerned have shown great interest. The sixth congress is to be in England next year, and it is somewhat unpleasant to reflect that the English national rheumatism committees have hitherto not been in a position to give any financial support to the League's work, which has been supported, throughout the depression, chiefly by the smaller countries and, in emergency, by the honorary secretary. The League is likely to receive adequate support henceforward, but having missed the aid that might have been expected from this country it has barely struggled through the years of difficulty and must be restored to security. If any of our readers have rheumatic patients who happen to retain some faith in the value of international co-operation the appeal might fittingly be passed on to them. Of the £1000 asked for, about a fifth has been secured and the situation is one in which a small sum may do substantial good, since it will make possible the continuance of work that was formerly, and will again be, financed by regular national contributions. Cheques should be made payable, and sent to Barclays Bank Ltd., 54, Lombard Street, London, E.C.3.

EPIDEMIOLOGY OF THE BASQUE CAMP

THE arrival of 4000 refugee children from Bilbao confronts us with an old but ever fascinating problem. Should the 'herd at risk' be kept concentrated or scattered? In this particular case, should the Basque children be split up into units of not less than 50 or so and moved into the various homes prepared for them in different parts of the country, or should they, on health grounds, remain in their original camp at Lastkigh? If the children were experimental herds

¹ *J. Amer. med. Ass.* May 15th 1937, p. 1708.

² *Modern Methods and Principles of Ventilation and Heating*. By T. Bedford, D.Sc., Ph.D., Investigator to the Medical Research Council's Industrial Health Research Board. London: H. K. Lewis and Co. 1937. Pp. 85. 4s. 6d.

of mice it would seem better that they should be kept together provided no new additions were made to the herd rather than that they should have the chance of infecting other herds all over the country. But the children are not mice; and though their health record so far is good their camp was designed for a considerably smaller population and as the *House of Commons* was told last Monday it is highly desirable that the number of children there should be reduced as speedily as possible. The objection raised is that they would be going to homes and institutions some of which already contain healthy children and have no special medical arrangements in operation such as have been made at the camp. Again, in theory the argument seems to be chiefly in favour of delaying dispersal. But what are the actual dangers to be feared? The children were all medically examined before embarkation and those who took responsibility for the examination Dr Richard Ellis and Dr Audrey Russell give good reason for thinking that the risk of importing trachoma is by no means as serious as has been suggested. Two cases of diphtheria and three of measles have arisen among the 4000 children but have been suitably isolated. And finally there have been six cases of typhoid fever. All of these however have appeared within the incubation period since leaving Spain and presumably there is little likelihood of infection occurring after arrival in England. Hence we are not considering the dispersal of an unhealthy herd as in the poliomyelitis outbreaks of 1926 and 1932¹ but of a healthy one. The visitors to the Bournemouth Poole and Christchurch district who scattered back to their homes during the 1936 milk epidemic for example, presented a much greater risk to the country. At Eastleigh each child is to have three full medical examinations before leaving the camp.

The Ministry of Health though it has no direct responsibility has been asked for its advice and has been in direct touch with the camp authorities through its medical officers. Its advice is apparently after some hesitation to allow evacuation of children going direct to empty homes and institutions where they will not be in contact with other children—provided that the medical officer of health of the district is prepared to accept them. The remainder are being inoculated against typhoid and will be evacuated when immune. This advice we regard as sound. Medical officers of health are not likely to grudge any extra trouble the present policy may entail nor will they want to put unnecessary obstacles in the way of colleagues who have done and are doing a fine piece of humanitarian work.

The Inter Departmental Committee appointed in April 1936 to inquire into the restoration of working capacity in persons injured by accidents has made an interim report (H.M. Stat. Office 4d). The object to be aimed at is the covering of the country with a network of fracture services attached to existing hospitals whether voluntary or controlled by the local government authorities. A model scheme has been prepared by the committee capable of adaptation to the varying circumstances and needs of different localities and areas. The maximum size of a fracture clinic compatible with an efficient unified control is put at one capable of dealing with 3000 to 5,000 cases a year of which about one third would on a general average need inpatient treatment involving the provision of say 40 beds. The

needs of rural areas would be met by linking them up with a fracture clinic at some convenient centre to which cases could be transferred. The committee offers its assistance in any difficulties presented by the application of such a scheme to local circumstances. Sir Malcolm DeLoraine has presided over the committee whose medical members are Miss Muriel Bywaters, Mr W. A. Cochrane, Dr T. Ferguson, Prof E. W. Hey Groves, Dr J. F. E. Priceaux, Mr H. S. Souttar and Mr A. C. T. Woodward.

The inquiry into the physical psychological and genetic aspects of mental deficiency carried on in the research department of the Royal Eastern Counties Institution at Colchester has received valuable aid from the trustees of the Rockefeller Foundation. Hitherto the research department under Dr Lionel Penrose has been financed by the Medical Research Council the Darwin Trust and by the Institution itself. Recently also a generous donation of £2200 was made by the Hon. Alexandrina Peckover towards the cost of a new laboratory and research offices provided by the Institution. Now the trustees of the Rockefeller Foundation have opened the way to further developments by making a grant at the rate of £600 per annum for five years to provide additional research workers and a non-recurrent grant of £700 towards the cost of laboratory equipment.

Sir THOMAS NEILL who died last week at the age of 81 years, was one of the three insurance commissioners appointed by Mr Lloyd George when the Act of 1911 came into force. He had had much to do with framing the scheme itself from his long experience with the Pearl Assurance Company and after serving as commissioner he became chairman of the National Amalgamated Approved Society. This post he held until his retirement last year combining it with many other important executive offices. His judgment was sound and in conference his opinion was influential and decisive. He had a slight stutter but there was nothing hesitating about his mind which worked like a well-oiled machine. His decisions which were nearly always right were quickly made and tenaciously held though keen and firm in business he was one of the kindest hearted of men as his staff well knew. He found difficulty in passing street collectors on flag days and on Queen Alexandra's day he would arrive at his office richly decked with roses. He will long be regretted by those who worked with him.

AN account of the memorial to the late Sir Walter Morley Fletcher printed for the trustees of the memorial fund at the University Press Oxford has been issued to all the subscribers to the fund. It is embellished by two illustrations one of which shows Miss Dora Clarke's posthumous portrait bust of Walter Fletcher photographed from the clay model the other a corner of the library of the National Institute for Medical Research with the finished bronze in position.

LEWIS VICTORIA HOSPITAL.—This institution whose accommodation has lately been doubled needs an increased income of about £100 yearly if the work is to go on successfully. A nurses' hostel has been built and the hospital extensions proved more complicated and expensive than had been expected. Private wards had to be closed last year because of the work and the income of the hospital suffered in consequence.

¹ See *Lancet* 1926 2 1070 1932 2 273 et seq.

SPECIAL ARTICLES

THE LISTER INSTITUTE

A YEAR'S INVESTIGATIONS

On June 2nd the governing body of the Lister Institute of Preventive Medicine, London, presented its annual report, signed by Prof William Bulloch, F R S, as chairman. The year has seen several changes in the staff working at the institute under the general direction of Sir John Ledingham, F R S. Dr E Weston Hurst left in September to become director of the Institute for Medical Research at Adelaide, Dr C Russell Amies (formerly a research fellow in bacteriology) and Dr A S McFarlane (research fellow in biophysics) have joined the staff, and on the departure of Mr J M Gulland, D Sc, in the autumn Mr A R Todd, Ph D, joined the biochemical department, of which Miss M G Macfarlane, Ph D, is now also a permanent member.

The following notes describe some of the many inquiries pursued during the year.

VIRUSES

Etiology of rheumatic diseases—Dr G H Eagles, with the assistance of Dr P R Evans, Dr J D Keith, Mr A G Timbrell Fisher, and Dr W H Bradley, has continued the study of a possible virus agent in acute rheumatism, rheumatoid arthritis, and chorea. Specific agglutination tests with the sera of patients suggest that these diseases have in all probability a common etiological factor, though other factors such as concomitant infection by streptococci probably play a part. Infection experiments have not so far given unquestioned confirmation of serological findings, but in two monkeys grave cardiac involvement has followed intrapericardial injection of rheumatic virus body suspension. In one instance the suspension was inoculated alone, in the second it was inoculated with a small dose of a streptococcal toxin. In both cases myocardial damage was revealed by histological study, but the typical Aschoff node was not demonstrated. Results of control experiments indicate that toxin alone is probably not responsible for the myocarditis. Experiments are under way to discover the cause of the prolongation, in monkeys, of the P-R interval, which is considered to a large extent pathognomonic of early rheumatic carditis in man.

Dr C R Amies has continued his investigations of the tumour producing agents in filtrates of avian sarcoma. His results confirm the fact that fowls bearing Rous sarcoma No 1 develop antibodies for the tumour agents. This immunity reaction can be demonstrated by neutralisation tests and also by agglutination and complement fixation reactions. It has now been found that the sera of rabbits which have been hyperimmunised with normal fowl protein exhibit strong neutralising activity against these purified suspensions of the Rous No 1 agent. The observations, so far as they go, are held to confirm experiments carried out some years ago by W L Gye and W J Purdy, on which their conception of the dual nature of the infective complex is largely based.

For some time Sir John Ledingham has been investigating the relationship of the viruses of rabbit myxomatosis (Surrell) and rabbit fibroma (Shope). It has been found that animals infected with the fibroma virus develop agglutinins for myxoma but often little or none for fibroma until a dose of

myxoma is given, when agglutinins for both appear in the serum. Dr E W Hurst passed the myxoma virus through the brains of rabbits and obtained a variant whose capacity to cause death after intra-cerebral inoculation was much reduced. The discovery of this variant should greatly facilitate further inquiries, for it is now possible to study animals that have recovered from myxoma without having to give them the fibroma virus first.

Staining of elementary bodies—Dr M Gutstein (Berlin) has elaborated a method for rapid staining of the larger virus bodies, based on the use of basic dyes in alkaline solution. No mordant is required and excellent microscopical pictures are obtained.

Vaccina—Dr M H Salaman has shown that the virus neutralising power of an antivaccinal serum can be removed by absorption with a sufficient dose of washed elementary bodies, but not by absorption even with large doses of the soluble antigen. On the other hand, precipitins and agglutinins could be absorbed from such serum in varying degrees by the bodies and by the soluble antigen.

ANTIGENIC CONSTITUTION AND IMMUNISING PROPERTIES OF BACTERIA

The Vi antigen of typhoid bacillus—Mr A Felix, D Sc, with Miss R M Pitt, has continued the investigation of the properties of the Vi antigen of *Salmonella typhi*. The conclusion that only strains containing both the O and Vi antigens possess the highest degree of virulence of which this organism is capable has been further strengthened. In spite of numerous attempts, a method of preparing anti-typhoid vaccine which would enable the Vi antigen to be preserved in its most effective form has not yet been devised. Dr Felix, in co-operation with Dr W D Nicol, tested the antibody response in 50 persons who had been given three doses of an alcohol killed typhoid vaccine by the subcutaneous route. A marked increase in the O antibody was observed in all those inoculated, and a significant increase in the Vi antibody in about half. But re-examination of the vaccine after storage for half a year, with or without the addition of phenol or tricresol, showed that the vaccines had almost entirely lost their capacity of stimulating formation of Vi antibody in the rabbit. Dr Felix has also been investigating the possible value of Vi agglutination in the detection of typhoid carriers. Sera from 45 carriers have been examined and the results suggest that Vi agglutination has a definite place in the routine diagnosis of typhoid carriers. It is noteworthy that all the 25 strains from chronic typhoid carriers examined were found to contain Vi antigen.

Dr H L Schütze and Dr P A Gorer are continuing their investigations of genetic constitution and immunity. Working with two pure lines and two selected lines of mice they have tested resistance to infection with *Salmonella typhi murium* and *S. enteritidis* also response to immunisation and the facility with which H and O antibodies are produced. Significant genetic and sex differences have been observed in resistance to infection and in ability to produce antibodies, but there seems to be no simple relationship between such ability to produce antibodies and natural resistance to infection.

Dr Gorer has studied the genetic basis of antigenic differences demonstrable in the erythrocytes of mice with special reference to the antigenic basis of tumour transplantation.

Two such antigens were found to depend upon single dominant genes. A sarcoma arising in a pure line of albino mice was found to be transferable to all other members of the line and certain hybrids derived from it but not to unrelated mice. It was found that all hybrids susceptible to grafts of the tumour possessed an antigen in their erythrocytes derived from the albino ancestors. If the antigen was absent the tumour invariably regressed. The sera of mice in which the tumour has recently regressed may often be shown to contain agglutinins for the erythrocytes of albinos. It was concluded that the fate of a transplanted tumour largely depends upon immunological differences between the transplant and tissues of the host.

MALE SEX HORMONES

Examination of the effects of the sex hormones has been continued by Dr V. Korenchevsky with the assistance of Mrs. M. Dennison and Miss K. Hall. The most remarkable property of the male sex hormones studied is their bisexual function—i.e. the property of stimulating the development of the sexual organs of both sexes in normal rats and bringing about a return of the atrophied organs of gonadectomized animals to or towards the normal condition. But whereas the restorative effect on all the sexual organs of the male rat is complete, in females the complete effect was obtained only when testosterone propionate was administered simultaneously with the female hormone (oestrone). It is also important to note that with oestrone alone it was found impossible to obtain (with the doses examined) a complete recovery of all the atrophied sexual organs.

The male hormones investigated may be arranged in descending order of activity as female sexual stimulants as follows: (1) testosterone propionate, (2) testosterone, (3) androstanediol, (4) androstenediol, (5) androstenedione, (6) transdihydroandrosterone, (7) androsterone. In ovariectomized rats, with a few exceptions, the male hormones produce changes—chiefly in the vagina but in some cases (testosterone propionate) in both vagina and uterus—similar to those seen during pregnancy. These are most pronounced when the male and female hormones are injected simultaneously.

Unlike the other male hormones, testosterone propionate has a stimulating though slowly decreasing action on the sexual organs for as long as 9 days after injection. For this period it completely maintains its effect on the adrenals, while the katabolic effect on the metabolism as shown by the changes in the body weight even increases. This property of testosterone propionate gives it an especial therapeutic value since results can be obtained with injections as infrequent as once in 10 or even perhaps 14 days.

RENAL FUNCTION—BLOOD COAGULATION

Prof. I. Ellinger and Dr. A. Lambrecht (Liège) have studied the localisation of the glycosuric action of phloridzin. They find that phloridzin interferes with the passage of certain substances from the lumen into the epithelium of the proximal tubules. The mechanism of this blockade has however not yet been ascertained.

The cerebro-spinal fluid in acromegaly.—Prof. I. Ellinger in collaboration with Dr. Dorothy Hare and Dr. S. Levy Shynsion has studied the influence of the cerebro-spinal fluid of an acromegalic woman on the urinary chloride and water excretion of rabbits injected subcutaneously with the fluid and given water per os simultaneously.

A slight increased rate of chloride elimination resulted but normal water diuresis was unaffected. On the other hand cerebro-spinal fluid from normal people and sera

from the acromegalic patient and other control patients had no action either on chloride excretion or on diuresis. This effect was less after irradiation of the pituitary gland, which also produced clinical improvement. In control experiments a standard solution of pitressin gave an antidiuretic effect as well as an increased rate of chloride excretion. It is concluded that the spinal fluid of the acromegalic patient contained sufficient amounts of a hormone of the posterior lobe of the pituitary gland but so far it has not been possible to decide whether the antidiuretic and chloride eliminating effects are due to different hormones or whether the antidiuretic effect of the posterior lobe hormone was masked by that of some other substance in the spinal fluid of this patient.

Dr. J. O. W. Barratt has completed his investigation of anticoagulant action. It has been found that sodium chloride, chlorazol and heparin resemble hirudin in producing their anticoagulant effect upon thrombin, no action upon fibrinogen could be observed. With improved technique it was possible to obtain an index of anticoagulative power and also to calculate coagulation times corresponding to varying concentrations of anticoagulant.

OBSERVATIONS WITH ULTRACENTRIFUGES

The two ultracentrifuges provided by a grant from the Rockefeller Foundation were completed in time for the visit of the designer, Prof. T. Svedberg of Uppsala in September (see *Lancet* 1936 2 874). The smaller equilibrium centrifuge which runs at speeds up to 18,000 r.p.m. has been found to be adaptable to the study of certain viruses and to the recently discovered virus proteins. Excellent sedimentation photographs have been obtained of tobacco mosaic virus protein and a study of the factors which determine its homogeneity in respect of molecular size is in progress. The behaviour of the blue respiratory protein (haemocyanin) of the blood of *Helix pomatia* has been exhaustively studied recently by Svedberg and may be used as a model of homogeneity in a substance of molecular weight of the order of millions. Preparations of elementary bodies from rabbit and sheep vaccinia virus have been investigated by means of the photographic technique and unexpected facts have come to light. Preparations of herpes virus have also been examined. A form of micropipette has been designed which enables fluid at different levels in the centrifuge cell to be accurately removed after the run.

The high speed ultracentrifuge running at the maximum speed for routine use (60,000 r.p.m.) has been used to study the sedimentation of human globin, serum albumin and serum globulin. It is also being used at lower speeds to investigate the behaviour of visual purple. On a visit by Prof. Svedberg in February the velocity centrifuge was run up to the maximum speed considered safe (65,000 r.p.m.) no trouble was experienced; this speed was maintained for four hours and opportunity was taken to analyse a specimen of horse serum.

NUTRITION

Vitamin A.—A collective investigation has been organized by Miss F. M. Hume as secretary of the Vitamin A Subcommittee in which ten different laboratories have participated to compare the results of biological and spectrographic estimations of vitamin A. The results showed a satisfactory degree of concordance and gave no support to any alteration of the value 1600 adopted for the conversion factor at the 1934 International League of Nations Vitamin Standardization Conference, but certain discrepancies leave a possibility that the spectrographic method

will have to be abandoned and vitamin A standardisation made to depend only on the biological test

Vitamin B₁.—Dr F Vivanco (Madrid) has investigated a specimen of "oryzannin" the crystalline vitamin B₁ hydrochloride prepared from rice polishings provided by Prof Suzuki. An average amount of 3.3 γ of the crystalline material had a potency equal to that of 1 international unit of vitamin B₁.

Ætiology of pellagra.—Miss Harriette Chick, D Sc, has collaborated with Mr T A Birch and Sir Charles Martin, F R S, at the Department of Animal Pathology, Cambridge, in experiments on the nutritive defects of maize

Young pigs were the experimental animals. The diet given contained over 80 per cent ground whole white maize supplemented with peameal and a small amount of purified casein to increase the protein content, extra salts and cod liver oil. Dogs maintained on this diet develop a disorder known as nutritional black tongue, characterised by anaemia, diarrhoea, and stomatitis with necrotic changes in gums and tongue which is held by many to be the analogue of human pellagra. After about six weeks on this diet the young pigs ceased to grow, showed a loss of weight, anaemia, and severe diarrhoea, and died unless the diet were changed. They showed no skin sensitisation to sunlight. The disease was prevented if 4 per cent yeast was included in the diet or if the maize was replaced by a mixture of wheat and barley, it was cured in a dramatic manner when yeast or an autoclaved protein free yeast extract was added to the diet. These facts pointed to a deficiency in maize of some heat stable constituent in the yeast extract—e.g., some constituent of vitamin B₁. Preliminary tests with flavin gave negative results and trials will now be made of other heat stable fractions and preparations from yeast extract. The above black tongue diet has been found relatively satisfactory for growth and maintenance of rats so that the missing anti black tongue (1 anti-pellagra) factor appears either to be non essential for the rat or to be adequate for this species in small amount. The pig, therefore, appears to be a more suitable experimental animal.

In continuation of his work in this field Prof Ellinger, together with Dr W Beckh and Prof T D Spies (Cincinnati) has studied porphyrin excretion in non endemic pellagra. In 10 out of 14 cases of "alcoholic" pellagra observed at Lakeside Hospital, Cleveland, U.S.A., an increased porphyrin excretion (coproporphyrin) was observed, the intensity of which showed a rough relation to the severity of the clinical symptoms. Dr Chick has been examining the nutritive value and light-sensitising properties of buckwheat in the hope of finding the causes of the light sensitivity characteristic of pellagra. A small daily ration (0.1 g) of the dried flowers caused a high degree of light sensitivity in albino rats, and Mr T F Macrae, Ph.D., is collaborating in attempts to isolate the active substance.

Wheat and bread.—Miss A M Copping has continued the investigation begun by M H Roscoe in 1935. As was to be expected more vitamin B₁ and B₂ was found in wholemeal flour and bread than in white flour and bread. The last two, however, proved to be unexpectedly rich in vitamin B₁ and control experiments with ground polished rice, in which the rats developed characteristic nervous symptoms of vitamin B₁ deficiency, emphasised the difference between polished rice and white flour in this respect. The content of flavin was low in both types of flour and breads, the white flour and bread being definitely inferior to the wholemeal. The second constituent of the vitamin B₂ complex (so called "vitamin B₂") was abundant in the wholemeal flour and bread and less so in the white flour and bread. The nutritive value of wheat flour and bread therefore appears to be limited by their low content of flavin.

(To be concluded)

MEDICINE AND THE LAW

Novel Point in Examination under the Lunacy Act

A FRESH pitfall for the medical practitioner seems to have been discovered in the Lunacy Act. The simple inference to be drawn from Section 285 is that a justice may direct a medical practitioner to examine an alleged lunatic and may order the examiner to be paid reasonable remuneration. A recent case in the county court at Ross on Wye, however, has disappointed the doctor who drew this conclusion. The disappointment was mitigated, rather than explained, by a passage at the conclusion of the judgment of the court. The plaintiff doctor, who was represented by counsel instructed by the Medical Defence Union, was said by the judge to have acted as any doctor of repute would be expected to act, especially upon the serious information he had received, the examination was made at the request of the justice of the peace and the proceedings were properly carried through. This judicial tribute was the more gratifying because there had, at committees of the defendant county council, been violent criticisms of the doctor's conduct and he was naturally aggrieved when these criticisms received publicity in newspaper reports. But, notwithstanding the judge's favourable comments, judgment was given against the plaintiff on his claim to be paid one guinea as reasonable remuneration under the section already cited.

In lunacy litigation where medical practitioners are concerned there is usually a complaint that certification has been too lightly made. In the case at Ross on Wye, the practitioner, after making his examination, declined to certify. The question of examination arose because certain information had reached the doctor. Whether the information was true or not the county court judge was not in a position to say, he was satisfied nevertheless that the doctor, having had that information, was bound to act as he did. In view of this expression of the court's opinion, it would perhaps be unnecessary to summarise the evidence, were it not that some statement of the facts is needed in order to show the apparent gap in the present law. The plaintiff doctor was medical attendant to a father, mother, and daughter. The daughter, whom we will call Miss X, was some thirty years of age. The doctor from his own observation had formed the opinion that she was unbalanced, but his view was evidently influenced by what he learnt from her parents who consulted him in great anxiety. She was said to believe it necessary to disinfect every body and everything. She was said to have poured disinfectants over her father and mother, to spend much of her time washing her clothes and her money in disinfectant, and to use a piece of paper or a cabbage leaf even for opening a door. One Sunday morning the doctor was summoned to the home of the family where he found the father suffering from a heart attack and lying on the floor as the result of an alleged assault by the daughter. The mother soon afterwards required medical attention for nervous breakdown attributed to the daughter's conduct. It was stated that on another occasion Miss X knocked her mother down and emptied a bowl of disinfectant over her. Miss X was also stated to have run about the garden without her clothes. The anxious parents asked the doctor's advice, they wanted to place their daughter in a nursing home. He suggested, as there was no home in the neighbourhood, that the daughter

should enter a mental hospital as a voluntary patient. The mother replied that the daughter would refuse to do so and that the fees were beyond her means. After further discussion the doctor was asked to speak to the local relieving officer. He did so and the officer brought him next day a form of certificate which included the usual space for facts communicated to him by others. He filled in this space at the request of the relieving officer who said it would save time. He seems also to have signed the certificate by mistake but the county court judge declared that the mistake was not one of any magnitude and could have no material effect upon the case. The relieving officer arranged for the presence of a justice of the peace and the parties (the justice, the relieving officer and the plaintiff doctor) went to the place where Miss X had her work. She was a school mistress and they went to her school—at her mother's suggestion since Miss X was apparently not sleeping at home. The justice said to the plaintiff: Will you go in and examine her? This was the direction on which the plaintiff relied under Section 285 and the justice in his evidence agreed that it had been given. Although they had fixed a time when school would be over there were two children still present. The doctor waited till they had gone and then discussed with Miss X the matters of complaint already mentioned. He ultimately came to the conclusion that he could not properly certify her: he went outside and said so to the magistrate. She asked who the people outside were and asked them to come in. The subsequent events, and in particular the complaints and criticisms of the doctor's conduct on the part of the defendant county council, were not placed before the court and were presumably irrelevant. The justice who saw Miss X stated in his evidence at the county court that there were no sufficient grounds for ordering her removal to a nursing home. Having satisfied himself of the terms of Section 285 the justice made an order for payment of reasonable remuneration "by the county council as the statute provides.

The county council denied all liability. It contended that Section 285 did not apply to the facts of this particular case. Its legal representative drew the court's attention to Sections 14, 16 and 17 of the Lunacy Act which relate to paupers deemed or alleged to be lunatic (or in the euphemistic language substituted by virtue of Section 20 of the Mental Treatment Act of 1930 rate-aided patients deemed or alleged to be of unsound mind). The council argued that Miss X, who was paid as a school teacher, could not be called a pauper. Section 13 relates to a person not a pauper and not wandering at large who is deemed to be a lunatic and is not under proper care and control. Section 16 relates to a person whether a pauper or not who is wandering at large. The council contended that none of these sections fitted the case of Miss X and that unless the action of the doctor could somehow be brought within the ambit of the Lunacy Act Section 285 (on which the plaintiff relied) did not apply. The court took this view; the plaintiff had to show that he had been doing some thing within the Act: he had failed to prove his case.

The claim was stated in court to have been the first of its kind. If it be indeed a *casus omissus* it would appear a proper matter for which Parliament should make provision when at length the law of lunacy is rewritten. The one consideration upon which everyone is agreed is that early examination and diagnosis is essential in mental treatment. This step can be taken only by bringing in the medical practitioner. In the facts under review it may be

that the practitioner the relieving officer and the justice acted under a misunderstanding of a series of complicated enactments. The medical practitioner was not negligent nor did he act in bad faith. There was obviously a proper case for investigation. If the justice could direct examination and could make the order for reasonable remuneration and if the county court judge could say that the plaintiff acted as any doctor of repute would be expected to act the county council might well have found itself able to honour the justice's order. Local authorities do not always behave prettily in litigation: there are ugly examples, for instances of their repudiation of liability for work ordered and completed where the contract was not under seal. But allowance must be made for a proper desire to protect ratopayers' pockets and for a natural susceptibility to influences local and personal.

Maclean's Stomach Powder

Members of the medical profession would scarcely encourage trade monopoly in the treatment of ill health. They do not seek to protect their prescriptions by patent for personal gain. It would be unfortunate for a doctor if after giving the public the benefit of his scientific research he were involuntarily to appear a party to its commercial exploitation. The case of Prof. Hugh MacLean, which comes to mind in this connexion has just been recalled in litigation before Mr Justice Farwell between two firms of manufacturers one of which was named Macleans Ltd. A report of the hearing (in the *Pharmaceutical Journal* of May 29th and June 5th) shows that the proceedings arose out of an application by Macleans Ltd. for an injunction to prevent a rival firm from passing off certain medicated sweetmeats as the goods of the plaintiffs. The defendant firm (Lighbown Ltd.) was marketing sweets advertised as containing Prof. MacLean's powder; it was also using the expression Maclean's sweets in a manner likely to deceive the public into thinking that the defendant firm was selling preparations made by Macleans Ltd.

If the main issue in the litigation was the confusion in the sale of sweets there was naturally an occasional allusion to the possible confusion due to the similarity of the name of Dr. Hugh MacLean and that of the plaintiff firm. The judge paid his tribute to the generosity of Dr. MacLean in giving the public the benefit of his work. Counsel and witnesses mentioned Dr. MacLean's research at St. Thomas's Hospital into the alkaline treatment of gastric ulcer and other ailments. His prescription was published; it was said in 1920 both in the *Pharmaceutical Journal* and in the *Chemist and Druggist*. In 1931 Macleans Ltd. the plaintiff firm introduced to the public a preparation named Maclean's Brand Stomach Powder. The firm had been founded by a Mr. Alex. C. Maclean; hitherto it had been concerned with tooth powders and other toilet requisites. It now sold the powder in bottles on which the name Alex. C. Maclean was printed. Mr. Lazell, a director and secretary of the firm told Mr. Justice Farwell of discussions with Dr. Hugh MacLean who had raised no objection to the firm's action. We were anxious, said Mr. Lazell in the witness box,

to do nothing which would harm the profession in the medical profession we coined the word stomach and in 1931 the powder was put upon the market; on the cartons were the words specially prepared according to the formulae of Dr. Hugh MacLean. Soon afterwards continued Mr. Lazell the firm received a letter from Mrs. MacLean taking

exception to this use of the name of her husband who was ill at the time. The words were consequently altered to "specially prepared according to the formulae of an eminent physician," and later were altered again to "prepared in accordance with the formulae used in the leading hospitals." Finally the words were altered to a mere statement that the formula was selected from a number of others. Macleans Ltd. had also registered the trade mark "Macs," and it sold throat lozenges under this name. The defendant firm, Lightbown Ltd., has been selling medicated sweets under the name "Merrimaes" which Macleans Ltd. said was calculated to deceive and cause confusion. In addition, as already mentioned the defendant firm had described its goods as "famous Maclean sweets," "Maclean sweets," and "containing the genuine Dr MacLean's stomach powder." Lightbown Ltd. set up a defence which unsuccessfully challenged the plaintiff's right to use the trade mark "Macs", with regard to the words "Maclean" and "Macleans," it was contended that they were not a trade mark, the defendant firm's sweets did contain stomach powder made up according to Dr Hugh MacLean's formula. During the hearing Mr Justice Farwell observed that he was more concerned with the sweets than with the powder, Dr Hugh MacLean had never made any sweets. The judge came to the conclusion that Lightbown Ltd. had made a deliberate attempt to filch from the plaintiff firm the reputation which Macleans Ltd. had made for its sweets. He granted an injunction to restrict the defendant firm's use of the name "Merrimaes" or the description "famous Maclean sweets" or "Maclean's sweets." He did not, however, grant one thing for which Macleans Ltd. had asked. He refused to issue any injunction in respect of the description "containing the genuine Dr MacLean's stomach powder." Macleans Ltd., he said, had no monopoly in the powder prescribed by Dr Hugh MacLean. The right to use Dr MacLean's prescriptions was not confined to any one person. Prior to 1931 "MacLean's powder," "MacLean's alkaline powder," or "MacLean's stomach powder" were terms "quite well known among doctors, to a large extent known among chemists, and to a lesser extent known among the public." Macleans Ltd. had made up this powder, put it on the market, and sold it under the signature of "Alex. C. Maclean", that fact did not prevent Prof. MacLean's powder being sold as MacLean's powder, Macleans Ltd. claimed no monopoly in the powder and could have none.

UNITED STATES OF AMERICA

(FROM OCCASIONAL CORRESPONDENTS)

BIRTHS, DISEASES, AND DEATHS

THE provisional mortality figures published in *Public Health Reports* for May 7th are based on data for twenty-five States and the District of Columbia for 1936. Mortality from all causes, which had been unusually low throughout the depression, increased in 1936 about 5 per cent over 1935, and the rate was the highest recorded since 1929. Only three States (Montana, South Dakota and Iowa) reported lower mortality than in 1935. Six diseases, however, registered new minimum death rates during 1936, these were typhoid fever, measles, whooping cough, diphtheria, poliomyelitis and diseases of the puerperal state. Scarlet fever was the only major disease of childhood which failed to register a new minimum

death-rate. Perhaps the most disquieting feature of the mortality conditions in 1936 was that the decline in tuberculosis mortality almost ceased in fact twelve of the twenty-six reporting districts noted increases. The so-called degenerative diseases—cancer, diabetes, cerebral haemorrhage and heart conditions—continued their upward trend. The combined mortality from influenza and pneumonia was the highest since 1929 and represented an increase of nearly 10 per cent over 1935. The birth rate continued to decline during 1936, it was 16.2 per thousand population, being 1.2 per cent below that for 1935 and 5.6 per cent below that for 1932. Ten States reported higher rates than in 1935, thirteen States lower rates, while three reported no change. Although the infant mortality rate increased about 2 per cent over the previous low record in 1935, it was still less than any other rate recorded. The report closes with the statement that "The time will soon come in this country, if present trends continue, when 95 per cent of the new-born infants will survive the first twelve months after birth."

AMERICAN PSYCHIATRIC ASSOCIATION

SOME 2000 neurologists and psychiatrists attended the 93rd annual meeting of this association held in May in Philadelphia. Among the 100 papers presented for discussion those describing the American experience of insulin shock in the treatment of dementia praecox were of major interest. The electrical activity of the brain cortex during epileptic seizures was described by Dr W. G. Lennox of the Harvard medical school, and the audience was fascinated by his suggestion that the solution of the problem of epilepsy must be sought in the chemistry of the gene. An increase is noted in puerperal insanity.

Data of great sociological import were disclosed in a case study by Dr Leo Kanner of Johns Hopkins University of 102 women released from the Baltimore training school for the feeble-minded. These girls were released on writs of habeas corpus granted by careless courts on the application of unscrupulous lawyers. The lawyers could not have obtained their fees without the interested collaboration of women in search of cheap domestic labour. None of the girls so released were paid normal servants' wages, some received no wages whatsoever. Of 102 girls released 17 acquired and transmitted serious communicable disease, 11 died before the age of thirty-two, 8 of them within five years of release. No less than 48 of the girls married. "Making every possible allowance," Dr Kanner was able to describe 10 of the husbands as "relatively stable and responsible individuals," 7 had prison records, 14 were habitual drunkards, 17 ultimately abandoned wife and family. To these hapless unions 165 children were born of whom 108 were "obviously and incontestably feeble-minded." Of the 102 girls 29 became prostitutes.

RABIES

THE daily press and the magazines have lately carried many scare stories about rabies. The situation has been well known to public health officials, and has been potentially dangerous for a considerable time in many different sections of the country. For several years rabies has been almost endemic among dogs and in districts where control has been relaxed human rabies has already appeared occasionally. In many districts stray dogs are allowed to become practically wild, and some of them have become rabid and bitten children without warning, and in many districts there is divided responsibility with regard to the handling of dogs and the reporting

of bites. The attention of the public is being called to these facts and already there has been some improvement in co-operation between various agencies. As has been pointed out in the medical journals the fact that the disease is primarily one of dogs has done much to enlist the support of humane societies.

THE ATLANTIC CITY MEETINGS

The annual meeting of the American Medical Association is to take place from June 7th to 11th, in Atlantic City, New Jersey. This occasion is usually accepted as an opportunity for the meeting of a number of other societies at or near the same time and in the same place. These include the American Bronchoscopic Society, the American Laryngological Rhinological and Otolological Society, the American Neurological Association, the Association for the Study of Allergy and the American Association for the Study and Control of Rheumatic Diseases. By this arrangement it is possible for a great many specialists to concentrate their major medical meetings into a relatively short period and to save a great deal of time and money in travelling—which, considering the distances involved, is of great importance.

THE 1937 CHRISTMAS SEAL

The National Tuberculosis Association has already published its design for the 1937 Christmas seals. This is no accident but part of a well planned publicity campaign which will make the American public more than ever seal conscious when the period between Thanksgiving Day and Christmas releases these most valuable revenue raisers for sale. The picture shows a bell-ringer lantern clasped in his left hand his bell swung vociferously above his right shoulder. The association is encouraging schools to study bell music and has arranged for the publication of a unit on bell music (a unit is a sort of brick in the structure of a school curriculum). They quote from Mrs. Coleman of Columbia University who will prepare this unit as follows—

The sound of stone or hollow resonant wood and of all the metals that come out of the earth have made a strange appeal to the mind and emotions of man. He has fashioned these materials into various forms—bells of some kind have been known all over the world—civilized and uncivilized—and practically all primitive peoples have used them. Rude tribes living in the remotest islands in the midst of the sea have been found to possess bells, and no matter how civilized and cultured people become they are still moved in some way by their sound."

When the art and science of salesmanship has progressed a little farther into the field of preventive medicine what wonders we may yet behold!

BUDAPEST

(FROM OUR OWN CORRESPONDENT)

THE CAMPAIGN AGAINST SYPHILIS

At a recent meeting of the Royal Medical Society Dr. Joseph Kiss, secretary to the Ministry of Health, detailed the development of the Hungarian campaign against syphilis. The decreased number of new patients at clinics and the diminished intensity of the disease among them of which there is statistical evidence provides but little information of the position in the country generally and the aim of the anti-syphilitic campaign is to reach patients infected with syphilis wherever they live. The spread of infection from patients with definite symptoms of

infection or those who present symptoms of other disorders in whom the disease is discovered by means of laboratory tests can be prevented but the problem remains of discovering and treating effectively those who harbour the infection and pass it on without knowing it. The most direct way of tracking hidden infections would be the systematic performance of serological tests but the present financial and economical conditions in Hungary do not allow the introduction of this costly solution which more over has disadvantages. A practical method for the discovery of a considerable proportion of infected persons suggested by Dr. Kiss was the serological examination of all pregnant women. On the assumption that 80 per cent of all macerated foetuses are syphilitic, an attempt since 1932 has been made to estimate the number of macerated foetuses amongst stillborn babies. The records from the obstetrical clinics and hospitals show that in 1933, 1934 and 1935 nearly 40 per cent of the stillborns were macerated making 12 per cent of the total births. After the birth of a macerated foetus at the Budapest obstetrical clinics the parents are advised to have a serological test made among deliveries taking place at the patients' homes no such advice has hitherto been given. During the period 1933-35 out of 6146 macerated foetuses 4673 that is 74.4 per cent, were born at home. It is probable that in the future these parents will be made to subject themselves to serological test and when reports are positive to undergo regular treatment. The National Sickness Insurance Institute already enacted that every single pregnant woman calling on the panel doctor must submit to such a test.

EFFECT OF PROSPERITY ON FERTILITY

In several European countries where the problem of legalised abortion has been discussed the opponents of strict prohibition always base their arguments on the importance of social position stating that in most cases it is poverty and the inability to bring up her child in comfort that drives the wife to the abortion monger. That this is a false assumption is proved by the everyday experience that it is not the poor that seek relief for getting rid of their burden but the well to do who are impelled by motives of personal comfort and vanity. In Hungary it is proverbial that in the Danubial beyond the Danube it is the custom to have only one child though this part of the country enjoys the greatest possible prosperity. The statistical returns relating to the fertility of married women, as shown by the census of 1930 point to the fact that the number of children of farmers and tenants holding over 100 acres of land averages 3.38 per family while in those with less than 100 acres the number is 3.75 and in agricultural servants and farm hands 4.20. These figures show the checking effect of property on the birth rate.

A COMMITTEE FOR THE PREVENTION OF BLINDNESS

After the formation of the International Committee for the prevention of blindness branches have been established in every country. The Hungarian committee was formed as a separate section of the National Public Health Association and its opening ceremonies were held recently. The president is the Countess Juliette Károlyi and the vice-president Prof. Emil Grosz. The latter speaking at the inaugural meeting detailed the history of international organizations against blindness. He said that in Hungary there are about 6000 persons incurably blind and of these the vision of about 2,000 could

have been saved if precautionary measures had been applied in time. The most important tasks are to diminish the devastation of infectious eye diseases and to check the occurrence of industrial accidents in connexion with the eyes. The committee has set itself as one of its tasks the education of those with impaired vision.

STILLER'S CENTENARY

Hungarian physicians have just celebrated the centenary of the birth of the late Prof Berthold Stiller, physician and director of the Jewish hospital in Budapest. His treatises on the asthenic constitution—his morbus asthenicus—began to appear in the 'nineties, and these were collected into one volume in 1907. He enumerated certain diseases, particularly pulmonary tuberculosis, to which the asthenic type is specially predisposed, and he pointed out that there are other diseases that do not occur at all in this type of subject. In his description he paid most attention to certain anatomical peculiarities, especially to a mobile tenth rib, as well as to a laxity of the connective tissue, giving rise to the visceral ptoses. He was also the founder of the science that investigates the connexions between bodily constitution and character, and which is generally attributed to Kretschmer. Accordingly Calvin, Schuller, Rousseau, Frederick the Great, and Robespierre were asthenics and their individualities were determined by their stature. A leading article in THE LANCET reviewed the book at the time and paid tribute to Stiller's "admirable critical faculties." Though the seed sown by Stiller proved very fertile, it did not meet with such a general recognition in Germany as elsewhere, but some years later they too acknowledged his merits and the importance of his work. But Stiller was not only an observant natural philosopher, he was also wholly a physician. Toward the end of his life he entered into a fierce dispute with the prominent Danish surgeon Rovsing, who advocated treating gastroptosis and nephroptosis by operation, while Stiller himself believed in improving the general condition and tuning up the whole body.

PARIS

(FROM OUR OWN CORRESPONDENT)

TUBERCULOSIS CAMPAIGN IN AN INDUSTRY

THE Michelin works at Clermont-Ferrand not far from Paris, present a useful object-lesson in community welfare with special reference to tuberculosis. At the beginning of this century, this industry, with some 22,000 souls dependent on it in the town began to set its house in order, pulling down slums and replacing them by model houses at a moderate rental. Between 1909 and 1930 3087 such model dwellings were built and by 1932 the slum area had ceased to exist. In 1915 Michelin made those family allowances which in 1932 became compulsory by law for the whole of France. In 1921 a dispensary was organised for the benefit of the tuberculous and the pre-tuberculous, and while in 1922 as high a proportion as 13 per cent of the attendants at this dispensary represented advanced cases in 1935 the proportion was only 1.5 per cent. The Grancher system of boarding out children exposed to infection in their homes has also been adopted by this community, and of the 229 children found to be exposed to infection between 1922 and 1927, 147 were promptly isolated, 23 were isolated after some delay and 59

were left in contact with infectious cases, and the tuberculosis mortality in these three groups was 0.6, 13, and 25.4 per cent respectively. Finding that applications for sanatorium treatment meant intolerable delays, the directors of Michelin opened a sanatorium of their own in 1926 with 90 beds. Here there is no limit to the duration of treatment, and 70 per cent of the patients admitted to this institution have been discharged under the heading "amelioration présumée durable." Children exposed to infection are given BCG and are examined at the dispensary three or four times a year. Thanks to these and many other benefits, the incidence of tuberculosis among the 22,000 members of the Michelin community has been greatly reduced. In 1931 there were 181 new cases of tuberculosis discovered in the community. The corresponding number in 1936 was only 84—a fall from 8.2 to 3.8 per 1000 inhabitants.

AMATEUR THORACIC SURGERY UNDER A CLOUD

In a circular letter dated April 7th, addressed to French prefects by the Minister of Public Health, attention is drawn to the fact that during the last few years surgical methods of treatment of pulmonary tuberculosis have not ceased to improve and now have become common practice in sanatoriums. But such operations should be in the hands only of skilled surgeons with adequate clinical and operative experience. The Minister of Public Health, on the advice of the Tuberculosis Commission, has therefore ruled that the names of all the doctors undertaking the division of pleural adhesions, phrenectomies, thoracoplasties, &c, in public sanatoriums must be submitted to him for his approbation with a complete dossier concerning their ages, addresses, and qualifications with special reference to their fitness for such work.

GUIDANCE FOR FOREIGN MEDICAL STUDENTS AND DOCTORS IN FRANCE

Although I have already referred from time to time to the Association pour le Développement des Relations Médicales entre la France et les Pays Étrangers, it may not be amiss to refer to it again now that during this summer and autumn Paris will be more than ever a centre of medical studies, not least post-graduate studies. The offices of this association are in the Salle Béchard, Faculté de Médecine, 12, rue de l'École de Médecine, and they are open every day from 9.30 to 11 and from 2 to 5 except on Saturdays. At these hours Mademoiselle Huré, who is Prof Hartmann's right hand, gives advice to students and doctors as to where they should go and what they should see. Her telephone numbers are Danton 09 59 or Danton 55 36.

In the quarterly bulletin of the association dated April, 1937, Prof Hartmann, who is the president, gives some instructive figures with regard to the attendance of foreign medical students and doctors at the Paris medical school since 1929. He deplores the change which has come over the scene in the interval owing to the world crisis, currency difficulties, xenophobia, and the competition of brand new buildings and schools of medicine in the South American countries. While in 1929 there were 293 foreign medical students registering in the Paris faculty of medicine the corresponding figure in 1936 was only 31. It might have been thought that Mademoiselle Huré's work would have diminished in proportion to the decline in the number of foreign medical students but of late French medical students have found their way in increasing numbers to her office, and her services have been much in demand.

in connexion with post graduate classes in Paris. On this subject Prof Hartmann is hopeful. As he points out there has of late been an encouraging rise in the number of such courses—a rise which assuredly reflects the growing appreciation they enjoy. In 1933 the low water mark for several years there were only 1013 persons attending these post graduate classes whereas in 1936 the corresponding number was 1200. It is certain Prof. Hartmann writes, that if these courses were announced early enough if they were well co-ordinated and well organised we would see a considerable rise in the number of their attendants. Might it not be possible for arrangements to be made between the French University authorities and the Anglo-Saxon press to give effect to this suggestion?

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

THE FACIAL EXPRESSION OF THE SICK CHILD

At a meeting of the Medico-Chirurgical Society of Edinburgh last week Dr William Brown, senior physician to the Royal Hospital for Sick Children, Aberdeen, spoke of the face and facial expression in the sick child and showed illustrative lantern slides. He pointed out that the maldevelopment of the lower jaw is often due to faulty methods of feeding and that the adenoid faces may be caused by various disturbances of the upper respiratory tract. An excess of hair is common in cases of mental deficiency but is often seen in children suffering from diseases of the lung; long eyelashes are often observed in tuberculosis. The colour of the child's face should be studied during sleep owing to the frequent vasomotor changes which occur when the child is awake. Cyanosis in infants generally means heart disease. A unilateral malar flush may indicate the side of the lesion in lobar pneumonia. Herpes is seen in pneumonia and other respiratory infections but also in meningitis. Thick and everted lips occur in severe mouth infections and also in cases of severe cough, when it is accompanied by cyanosis and swelling of the eyelids. Thrust is indicated by an open mouth and a dry tongue and when these signs are present fluids should be introduced by every available route. An open mouth or its opening and shutting also suggests hunger and the sight of a bottle produces the sucking reflex in such cases. Wasting may be due to loss of fat or loss of fluid, the last fat to disappear from a baby's body is the sucking pad in each cheek. Dehydration has a distinct facies which calls for the urgent administration of fluids, the orbits are hollow, the fontanelle is depressed, the eyes sunken and staring and the skin of the lower jaw loose and redundant. In cases of pyloric stenosis the forehead is lined with parallel horizontal furrows, an appearance according to Dr Brown almost diagnostic of this condition. The sudden development of oedema suggests frontal sinusitis or cavernous sinus thrombosis. Oedema of the eyelids is often observed in children who have been starved; persistent oedema involving only one eye may occur in middle ear disease. It is important to observe the eyes of infants, a sign of pain is wide dilatation followed by contraction. In a congenital heart disease the eyes are often dark brown and very bright. The sudden onset of squint or ptosis suggests meningitis but temporary ptosis may occur in middle ear disease. The appearance of open fixed eyes when the child takes

no interest in his surroundings is a bad sign. When the child is conscious, has wide open eyes and finds difficulty in breathing pyelitis is often present. The facial expressions of children are simple and in infants there are only three—complete repose, pleasure or annoyance. Dr Brown referred to the mask-like face of chorea and pointed out that the reappearance of expression is a sign that the acute stage is passing off. The child suffering from Pink disease is really miserable. He cannot sleep, eating is painful and the extremities are tender. Infants and very young children never smile when seriously ill so that the first smile is a welcome sign of improvement.

OCCUPATIONAL THERAPY

The annual report of the medical superintendent of the Astley Ainslie Institution, Edinburgh, shows that the number of patients who entered the institution was 1077 during the past year and that the average stay for each patient was 9.5 weeks. Fifty-one of the patients had been in the institution for over six months. The maintenance cost per bed for a year is now £151. An interesting development has been the building of an occupation therapy department which was opened in May of last year. The building has one storey and consists of a central section with two large wings projecting from either end to conform with the butterfly pattern of the existing pavilions. The wings contain the main work shops, one for the quiet crafts such as weaving, painting, basket-making and the other subdivided into two arms, the larger for the noisier crafts such as carpentry, the smaller for pottery work. Large windows form the greater part of the wall space of the main workshops so that when the weather is suitable the patients work under open air conditions. The daily average number of patients treated in the workshop has been 97.

IRELAND

(FROM OUR OWN CORRESPONDENT)

FEES FOR INOCULATION AGAINST DIPHTHERIA

The annual meeting of the Irish Free State Medical Union was held in Dublin on June 3rd when Dr Conor Maguire was re-elected president for a second year. The report of the council stated that there were 871 members on the register of the Union at the end of 1936. The number has increased considerably since that date. It was announced that arrangements were being made for the publication of a monthly journal and that the first number would be issued on July 1st.

A long discussion took place on the question of the remuneration for the work of immunisation against diphtheria. The demand of the Union hitherto has been for a fee of two guineas for a season each season to cover not more than twelve completed cases. The Minister for Local Government and Public Health had refused to sanction fees greater than 1s 6d per case where the one injection method was followed and 2s 6d per case where the three injection method was followed. For several months past country practitioners have been engaged in the work receiving no fees but leaving the settlement as regards fees in suspense. Dr J. P. Shanley, honorary secretary of the Union, related the steps that had been taken to secure a satisfactory settlement. Recently the parliamentary secretary had suggested

a sessional basis for remuneration, a fee of one guinea to be paid for each session of twelve patients. As this was worse than what the department had previously been willing to sanction, the offer had been refused. The medical secretary, as the result of inquiries made in Belfast and London, had found that in Northern Ireland the two injection method was most in use, and a fee of 2s 6d was given for each injection. In England the fee varied from 5s to 10s per injection, the medical practitioner supplying the material in the areas where the higher fees were paid. After protracted discussion a resolution to the effect that the fees should not be less than 2s 6d per injection was passed, and if this offer were not accepted within four weeks it would be withdrawn.

ANNUAL DINNER OF THE UNION

The first annual dinner of the Irish Free State Medical Union was held on the evening of the annual meeting in the Dolphin Hotel, with the president in the chair. Over a hundred members and guests were present, including Mr Sean T. O'Kelly (Minister for Local Government and Public Health, vice-president of the Executive Council), Mr Alfred Byrne (lord mayor of Dublin), Dr Denis Coffey (president of University College), and Mr P. Doran (chairman of the Hospitals Commission).

THE DUBLIN HOSPITAL PROBLEM

The daily press of Dublin has given wide publicity recently to a plea made in the annual report of the board of governors of Sir Patrick Dun's Hospital that the Minister for Local Government and Public

Health should come to a decision about the future of the Dublin hospitals. Attention is drawn by the governors to the recommendation made to the Minister by the Hospitals Commission some eighteen months ago in favour of the development of four large voluntary hospitals in Dublin, each to contain accommodation for some five to six hundred beds. The governors believe that the Commission under estimated the needs of Dublin. They point out that the demands for hospital accommodation are steadily increasing. In order, as far as possible, to meet these growing demands, the governors have, as a temporary expedient, found it necessary to use stretchers and temporary beds, yet many patients have had to be turned away for sheer lack of space. This condition clearly cannot be allowed to continue. Even if the Minister decides on the erection of five large hospitals, much time must elapse before the buildings can be occupied. During that time temporary accommodation must be provided. Sir Patrick Dun's is one of four small hospitals which accepted cordially the suggestion of the Hospitals Commission that they should amalgamate to form one hospital of 500 or 600 beds. They believed that the era of small hospitals had passed, and that larger hospitals must be built if efficient service was to be rendered. Their proposals have been before the Minister for some eighteen months, backed by the support of the Hospitals Commission, but they have been unable to obtain a decision. They must make some provision to meet the demands on their service and accommodation. They are waiting to be told whether the provision is to be temporary or permanent.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index.

BY TWELFTH MAN

II

It has been said repeatedly in recent years that surgery is the greatest of the arts. When I first read this I believed the writer to be jesting, but as the assertion was frequently repeated I concluded that it was intended to be a statement of fact. The psychologist would regard this as a "wish fulfilment" definition. For if surgery is the greatest of the arts and X the greatest living surgeon, then it follows that X is a finer artist than Brangwyn or Sickert, Epstein or Gill, Tom Webster or David Low. In fact, as Arnold Bennett used to say, a terrific swell.

An artist creates beauty but a surgeon creates nothing. Moreover the surgeon works in perishable material and the artist who uses his hands is careful to select a medium that has durability.

"But beauty vanishes, beauty passes,
However rare, rare it be,
And when I crumble—who will remember
This lady of the West Country?"

Or indeed the surgeon who defiled her beauty with his so lovely gastrojejunostomy? Surgery must be placed amongst the crafts, but here again it takes a lowly place unless the crafts are being adjudged solely for their dramatic quality or utilitarian value, when it goes top. Surgery may confer imperishable value on the human race by prolonging the life of a true artist or a real craftsman. But it may render

dictators the same service. Who can hope to cast the balance sheet of such indiscriminate life-saving?

* * *

This desire to make the best of a world other than one's own has something to do with the complaint that clinicians are so infrequently awarded the Fellowship of the Royal Society. Lewis, Trotter, Parsons, Gordon Holmes, and a few others and the list is complete. I think there is little reason to complain. The first-class clinician, be he physician or surgeon, rarely adds much to the sum of human knowledge, his chief claim to distinction is his highly developed clinical skill which dies with him. Moreover, he gets a larger share of material success than falls to the lot of the pure scientist—honours, wealth, and fame. Not that an F.R.S. is always a badge of poverty and social insignificance.

* * *

Hospital staffs were just emerging, when I was a student, from the sometimes mild but often bitter antagonism which existed between physician and surgeon. Physician and surgeon are now united, as brothers engaged in empirical living, before the cold disdain of the scientist and research worker. No doubt we shall soon have passed through this phase also, but the clinician is sometimes stimulated to counter reaction. A London Surgeon wrote in *Grains and Scruples* that "most men who undertake research

of set purpose do so less from a passion for discovery than from a knowledge of their own inadequacy for the battle of life from a desire for some sad mechanic exercise like dull narcotics numbing pain." A Doctor without Patients replied that "our faculty suffers too much from mutual scorn. Sir A. B. in Harley street sneers at the lough browed Prof. C. A. cleverish man my dear fellow but no breadth at all, no vision and secretly fears and envies C's exact knowledge. Prof. C. entertains his friends with anecdotes of that priceless fool B's ignorance and is secretly annoyed that B can afford a better car and more exciting holidays than he. They really know very little one of another."

The opinion of A. London Surgeon is elaborated by Aldous Huxley in his recent novel *Eyes in Giza*—"Scholarly philosophers, men of science—what other class of men has succeeded in getting the world to accept it and more astonishing go on accepting it at its own valuation. But in fact the Higher Life is merely the better death substitute. A more complete escape from the responsibilities of living than alcohol or morphia or addiction to sex property. The Higher Life can fairly wallow in his good conscience. For how easy to find in the life of scholarship and research all the equivalents for the usual virtues—Obedience of artistic and mathematical form, Imitation of scientific research, Courageousness of thought, Bold hypotheses, Logical integrity, Temperance of views, Intellectual Humility before the facts. All the cardinal virtues in fancy dress. The Higher Lifers come to think of themselves as saints—saints of art and science and scholarship. This I take to be Aldous Huxley's way of saying that he is every bit as good a man as was his grandfather the great T. H. But seriously which of us avoids this sad mechanic exercise? I can't live for all of us as A. Doctor without Patients said, one damned thing after another in the eighteenth or the twentieth centuries, country practitioners or university professors? I see no battle of life in the laboratory (I have thee by the throat, thou million murdering death!) Are we not all, in some sense, escapees from responsible living? Who shall cast the first stone?"

The desire of some clinicians to see their art transformed to an exact science is understandable but it is less excusable in our day when science itself is regarded as a form of art, an imaginative picture constructed by the human mind of the workings of the universe—and when as C. E. M. Joad has said the kind of information which science has to offer in respect of many things is not generally regarded as the kind of information which matters. I once heard Sir Almroth Wright address an audience of medical students and in inimitable fashion abjure them to see like the devil from the *salus empericus* and clung as they would to their hope of salvation to the *passus scientificus tutus*.

Listen to two doughty and distinguished opponents of this conception of clinical medicine as a science. A Rusticating Pathologist wrote "I was rather shocked to read in THE LANCET the other day that the conservator of the Hunterian Museum thought that the student should be well trained to the experimental method because he would find when he came to clinical work that diagnosis was conducted in the same way." This is either bad experiment or bad medicine. It has always seemed to me that the great trouble of the doctor is that he has to do sums

with numbers which are often very uncertain and his great pride that he usually gets the answer some where near right. If he failed to come to a conclusion adequate for action he would be a bad doctor. If he drew a conclusion from such froward data he would be a worthless experimenter. And, again as a patient I judge that his first business is to be a doctor. To cure a patient without knowing what is wrong with him is no mean performance. And Sir Auckland Geddes most unexpected of allies: "The real business of clinical medicine was not science. It was a personal relationship into which much sincerity and medical knowledge were suffused by the physician and trust and some dependence on the patient. Too many come to the sick room thinking of themselves as men of science fighting disease and not as healers with a little knowledge helping nature to get a sick man well. Beyond their scientific knowledge of man lay an incompletely explained area in which important things happened without discernible physical cause. Once they had ceased to fear what seemed to them non rational and recognised that human reason could not grasp all reality they could get to know a good deal about man." This view of the function of clinical medicine does not on the one hand require the abrogation of human reason nor on the other neglect the new knowledge which streams from laboratories.

Before I leave this matter of clinical medicine let me refer to this new "this happy breed of men" the Clinical Scientists. It will be interesting to see just how much clinical medicine benefits from the attempt to apply laboratory methods in the investigation of disease in the human subject. It is one thing for men of genius like Thomas Lewis and James Mackenzie after many years of varied activity deliberately to limit themselves to work in a restricted field. They will certainly produce results of value. But the neophytes who follow them patiently imitative having known no other good than this and desiring none will they too bring in the sheaves with them? How can the self-sterilised be fecund? I met a precocious young man just down from Oxford who when I asked him what he was going to do told me he was going to be a dramatist. He ignored the fact that dramatists begin life as actors, journalists, authors, shop assistants, stockbrokers, barristers, dramatic critics, schoolmasters, and doctors for the sufficient reason that life is the dramatist's workshop. So it is with clinical research. A man will only pursue his own ideas with passion and profit. Fruitful ideas for clinical research will arise in the course of clinical practice so that the clinical scientist must evolve from the practising clinician. It is therefore no coincidence that James Mackenzie and Thomas Lewis each began a scientific research into clinical problems late in life. To encourage young men to become clinical scientists by giving them whole time salaries which do away with the need for clinical practice is as absurd as it would be to attempt to create a new School of British Drama by putting all the potential dramatists in a closed community compelling them to do nothing but read Shakespeare, Sophocles and Shaw.

This week I have stolen too much of other men's thunder. With shame I recall that A. Public Health Clinician wrote "To day with the passage of the years I rarely use quotations but I endeavour to express myself clearly and give no one else credit for my ideas. How he must deprecate my derivative performance."

¹ Guide to Modern Thought. London: Faber and Faber.

PANEL AND CONTRACT PRACTICE

Court Finding on Capitation Fee

THE Ministry of Health issued on June 7th the finding of the court of inquiry set up by the Minister of Health and the Secretary of State for Scotland under the chairmanship of Lord Amulree, to consider the question of the capitation fee payable to medical practitioners under the scheme of National Health Insurance. The court was asked to investigate the question whether any, and if so what, alteration ought to be made in the amount of the doctors' capitation fee, having regard to any changes since 1924 in the cost of living, the working expenses of practice, the number and nature of the services rendered to insurance patients, and other relevant factors, and on the assumption that as from Jan 1st, 1938, employed persons under the age of 16 will have become entitled to medical benefit by virtue of amending legislation. The finding of the court is that the appropriate capitation fee should be 9s, the figure at present obtaining in regard to insured persons over the age of 16.

The introduction of legislation to entitle boys and girls to medical benefit immediately on becoming employed after reaching the school leaving age has awaited this decision, and the Ministry hopes it will now be possible to introduce the necessary bill in Parliament.

Delayed Acceptance Forms

The London medical benefit subcommittee asked the service subcommittee to investigate a case in which a practitioner had been remiss. In July, 1936, his attention had been drawn to the fact that during 1935 he had submitted only five acceptances and then on March 31st, 1936, he had submitted no less than 165. A temporary improvement followed but from Sept 30th, 1936, to April 1st, 1937, no acceptances were submitted. On the latter date 101 medical cards were submitted, some of which had evidently been in the possession of the practitioner since October, November, and December, 1936. The doctor told the subcommittee that he understood other practitioners were in the habit of submitting acceptances once a quarter and he had not appreciated that by retaining the medical cards he had in fact committed a breach of the terms of service. The subcommittee pointed out to him that the seven days' limit, laid down in Clause 3 of the Allocation Scheme, was not a troublesome piece of red tape but was an essential part of the machinery for the provision of medical benefit. Apart altogether from the interference with efficient administration the insured persons had been deprived of their medical cards which was likely to cause inconvenience if they should require treatment away from home. The report of the subcommittee points out that this is the first time they have been called upon to deal with a breach of the terms of service of this nature but they understand that the practitioner concerned is by no means the only offender. Beyond deciding that there had been a breach of the terms of service the committee took no action but they indicated that should there be a repetition of the offence they would feel compelled to take a more serious view of the matter. The practitioner has in effect fined himself because in many cases he neglected to submit acceptances during the quarter in which they were made.

Interference with Choice of Doctor

Two doctors were in partnership and, as sometimes happens, were not on speaking terms. The partnership was to be dissolved, and the junior who was going out found that insured persons whom he had accepted were receiving medical cards bearing the name of the senior partner. The insurance committee had an examination of the acceptances made when it was clear that in a number of cases the junior's signature had been erased or obliterated and that of the senior substituted. Certain insured persons were interviewed by the medical service subcommittee and made it clear that they wanted the junior partner, and in some cases did not even know his colleague. The senior partner admitted the deliberate alteration of the medical cards because he thought that as the junior was leaving the practice shortly it was absurd for him to continue to accept patients. He accordingly instructed the secretary to the partnership to intercept acceptances by the junior and to submit them to him for signature. He had no ulterior motive and at the time quite failed to appreciate that he was treating the wishes of the patients as of no effect. He offered to consent to the transfer of any of the patients to other doctors but the subcommittee decided against this, instead they caused the acceptances to be cancelled and open medical cards to be sent to the insured persons. The secretary admitted having held up the acceptances (although she had been told to send them in weekly) and having erased the junior's signature, saying that she regarded herself as employed by the senior and that she did not feel it her duty to tell the junior what she had done. The subcommittee had no doubt that the strained relations between the partners explained in some degree the action taken by the senior. There was no attempt at forgery—the alterations were obvious—nor was there any financial advantage to the senior because the profits had to be divided in accordance with the partnership deed. On the other hand they regarded as serious the interference with the right of insured persons to choose their doctors. There being no provision in the terms of service which the senior partner could be held to have infringed the committee simply put on record that the actions of the senior partner were deserving of censure.

Approved Societies and Hospital Treatment

The Central Bureau of Hospital Information has just published a useful addition to the numerous memoranda prepared for the assistance of hospital administrators. Memo No 108, replacing Memo No 49, contains (1) a list of the approved societies which have included hospital benefit in their fourth valuation schemes of additional benefits, and (2) a list of approved societies which, although not providing hospital benefit, yet allocate an annual sum for the purpose of making donations to charitable institutions, including hospitals. There are 273 societies in the former list and 85 in the latter, and among the 273 societies providing hospital benefit are 70 which in addition, make donations to hospitals and other charitable institutions. It is not so widely known as it should be that approved societies are not only empowered to set aside an annual sum from which to make donations to charitable institutions, but may also, with the consent of the Minister of Health include hospital benefit in their scheme of additional benefits adopted

after the completion of the fourth valuation. Payments made to hospitals by a society providing the benefit are based on the number of the society's members treated as inpatients and the duration of the period of treatment in each case and it is necessary for a hospital in applying to the societies for payment in respect of their members treated to furnish to the society a quarterly statement containing certain particulars of each patient which are set out in the memorandum. Payments are made only in respect of those members who were in the society during the period in which the surplus accrued out of which hospital benefit is payable. Copies of the memorandum which seems indispensable to all hospital administrators can be obtained from the Director of the Bureau 12 Grosvenor crescent London S W 1. The price for single copies is 4d post free and for 12 copies 3s 6d.

THE LANCET 100 YEARS AGO

June 10th, 1837 p 410

FROM A CALEDONIAN SURGICAL REPORT

"EXTRAORDINARY SURGICAL OPERATION.—In passing along the South Bridge yesterday forenoon, our attention was attracted by a great crowd of gentlemen at the gate of the Royal Infirmary pressing inward. Joining in the crowd, we were carried along with it to the surgical hospital, where we found the operating theatre crammed to excess chiefly by medical gentlemen and students amongst these we recognised Sir George Ballingall Dr MacLagen, Mr Newbigging Dr Campbell, the surgeons of the 14th Light Dragoons and 42nd Regiment besides many country surgeons. The excitement we have described was occasioned by the knowledge that an operation never performed in Great Britain was to be done upon a young man by Professor LIZARS. The case was what is technically called aneurism of the subclavian artery so near the heart that the flat large trunk required to be tied namely the *arteria innominata*. The young man, a carter from Dalkeith was placed upon the table and the Professor commenced by making an incision in the neck and progressively cut down to the artery when the ligature was applied. The operation was completely successful. The patient who bore it with uncommon fortitude was only on the table for fifteen minutes altogether. Thus as we have already said is the first operation of the kind which has been attempted in Great Britain. We understand that it was once successfully performed at Berlin by Dr Graefe and once in New York by Dr Mott.—*Caledonian Mercury* June 1.

"* The details of this case were set out with a full description of the technique of this operation at which the patient was not 15 minutes on the table in the issues of THE LANCET on the same volume dated June 17th p 445 and July 15th p 602. The patient survived for 21 days after the operation.—P D L

From lectures on *Materna Medica and Therapeutica* delivered by GEORGE G. SIMMOND M D at the Windmill street School of Medicine p 396

It is in the paroxysm of spasmodic asthma that stramonium has been most generally used—formerly very often without first seeking that a life and assistance which should only be sought from the medical man of long experience and careful observation. Indeed the paroxysm of embarrassment of breathing is so very distressing that an individual flies to every object which holds forth to him a promise of relief; and hence it is that the bold and imprudent adventurer has so often chosen as the province in which he will carry on his nefarious practice diseases of the respiratory organs. A sufferer will have recourse to any remedy that he believes can control the disease and for instantaneous relief he will encounter any difficulty. During the paroxysm life is insupportable

MOTHERS AND CHILDREN

(FROM A CORRESPONDENT)

THE seventh English speaking Conference on Maternity and Child Welfare was held in the great hall of B.M.A. House on the first three days of June. The decision to hold it a month earlier than usual enabled many distinguished visitors who had come over for the Coronation to take part.

HISTORY OF THE CHILD WELFARE MOVEMENT

Reprints¹ of a brief history of the child welfare movement written by Dr G F McCleary chairman of the Association of Maternity and Child Welfare Centres, were distributed beforehand to the delegates to enable those unfamiliar with the history of the movement to grasp how it came about. The urge to do something sprang from the *Congrès international des gouttes de lait* in Paris in 1905 at which were present, besides himself Bailie W F Anderson and Dr A K. Chalmers of Glasgow Dr S G Moore and the late Alderman Benjamin Broadbent of Huddersfield. Largely owing to the influence of these British delegates the movement quickly took root in Britain and in June 1906 the first Conference on Infantile Mortality was held in London under the presidency of Mr John Burns then chairman of the Local Government Board. But perhaps we must go further back than Dr McCleary to find the roots of the movement amongst which may well be (1) the rapid fall of the birth rate in France (2) the terrible toll of death from infantile diarrhoea in hot summers especially in 1890 (3) the fact that though preventive medicine had done much to reduce the incidence of disease and the general death rate it had so far done nothing to reduce infantile mortality which stood constant between 100 and 200 per 1000 born according to locality.

MATERNAL MORTALITY

The conference organised by the National Association for the Prevention of Infantile Mortality of which Miss J Halford has been hon secretary since the first conference in 1906 was opened by Sir Kingsley Wood, Minister of Health who spoke on the progress of midwifery practice in Britain during the past five years. He reported the maternal mortality for 1935 as the lowest for five years at 3.81 per 1000 live births. antenatal attention he said is now given to about 60 per cent of pregnant women and the number of women delivered in institutions has risen by 50 per cent since 1932. He referred to the committee he has appointed to inquire into the practice of induced abortion and to the reports recently issued by his department on the so called black areas. A delegate from the United States stated that her country compared favourably with ours in the reduction of child mortality but that the maternal mortality was much higher—about 6 per 1000. It should be borne in mind however that in the States the rate is not computed in exactly the same way as it is here nor is it similar in all the States furnishing returns. Making allowances for differences of casting maternal mortality of England is the lowest of any community speaking our common tongue suggesting that English practice is the best expression of the traditional British approach to midwifery. Our rate is also lower than that of any country with midwifery traditions different from ours with the possible exception of Scandinavia.

¹ Published in *Mother and Child* Lond for June 1937

BACKWARD AREAS

At the first session two papers on welfare work amongst people living in primitive conditions overseas were presented, but not read one by Dr Mary Blacklock, formerly of Sierra Leone, the other by Dr Mabel Brodie, now of Kedah, Malaya, and formerly of Durham county council. The writers spoke upon their papers and dominated the discussion, the most important points of which were the solution of the difficulties of welfare work amongst primitive races where approach must be different from what it is in England, and in places, such as parts of Australia, where populations are sparse and distances enormous. Of special interest were Dr Blacklock's reference to the "hungry season" in Tropical Africa where the natives live mainly by rude agriculture and have recurrent seasons of short rations, often augmented by failure of crops, the obstruction to sound midwifery by tribal customs and religious prejudices and the difficulty of implanting what was best in the European system on what is good, or if not good must be tolerated, of local tradition and practice. It is surprising what progress has been made, especially as in many parts of the Empire the official health service has not the staff to attend to more than the rudiments of sanitary administration.

PROGRESSIVE LEGISLATION

At the second session, which considered progressive legislation in connexion with maternity and child welfare, the chief speakers were Mr R J Howard Roberts of the London County Council and Miss Eleanor Harwarden of South Africa. Two interesting items of the discussion were a plea by Alderman Miss Kellett of Shoreditch for convalescent homes for mothers delivered in their own homes, and another by Councillor Schwann of West Ham for control of factory inspectors by local authorities. The latter is an old contention, somewhat outside child welfare proper, and it was not discussed. Dr Ethel Cassie of Birmingham called attention to the fact that foster children can be dealt with under the maternity and child welfare authority only until they are five years old, after which age they must pass to the public assistance committee which under the Children Acts then take responsibility until the children are nine years old. This matter, now it has been raised, should be capable of adjustment without special legislation. At the same session, Mrs Braddock of Liverpool restated her well known objections to children's courts. Her views, if stated somewhat more softly, would meet with much sympathy.

OTHER TOPICS

Two sessions on the second day were devoted to the education of parents in the care of their children and to nutritional problems in relation to parent and child, Dame Enid Lyons of Australia presiding in the morning and Dr R E Wodehouse, Deputy Minister of Public Health of Canada, in the afternoon. Papers by Dr Eric Pritchard, Dr Ursula Cox, and Mrs Charlesworth (of Northampton Voluntary Infant Welfare Association), Dr Robert McCance, and Dr R Jewesbury, describing situations not unfamiliar to the British section of the audience, were very welcome to the foreign visitors, for they brought out clearly our ordinary everyday English child welfare practice. Here was a case in which much was gained and nothing lost by presenting old matter with no new trimmings.

The last day touched more contentious subjects, psychology in the morning and orthopaedics in the

afternoon. The chairman at the former was Dr J F Gaha, Minister of Health for Tasmania, and at the latter, Dr Josephine Baker, representing the U.S.A. Government. The chief speakers on psychology were Dr Margaret Lowenfeld, hon. director of the Institute of Child Psychology, and Dr J A Hadfield, director of studies at the Tavistock Clinic. Both dealt with maladjustment and its prevention. Prof Helen Koch of Chicago described an experiment in treating asocial children which is being tried with fair success in America. Prevention was the keynote of this session and the net result of the discussion was the impression that lack of parental love was the primary cause of asocial tendencies and neurotic perversions. There was more than a suspicion that over anxiety to avoid the cedipus and electra complexes may lead to the rupture of what might be called the family love bond which ties the generations together and is the base of our social conventions.

At the last session Dr B E Schlesinger (Royal Northern Hospital) spoke of the management of child rheumatism, and Mr E S Evans (Heatherwood Hospital) on general orthopaedics.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg Comdr A W Gunn, M.V.O., to *Hawkins*
Surg Lt Comdr C Cussen promoted to rank of Surg Comdr
Surg Lt Comdrs D A Newbery to *Pembroke* for R.N.B. and to *Sussex* (on recommg), and E E Malone to *Shropshire*
Surg Lt Comdr (D) J C Benson to *Victory* for R.N.B.
Surg Lts H O'Connor to *Inglefield*, F P Ellis to *Victory* for R.N. Hospital, Haslar, G H C R Critien to *Resolution*, G R Rhodos to *Rochester*, D B Jack to *Wildfire*, and F W Baskerville to *Pembroke* for R.N.B. and to *Sussex* (on recommg)
Surg Lt (D) K. E. J Fletcher to *Suffolk*
The Gilbert Blane Medal for 1937 has been awarded to Surg Lt W J Forbes Guild, M.B. St. And., of the R.N. Hospital, Portland
Surg Lt G S Thoms (not G S Thomas, as stated last week) transferred to Permanent List

ROYAL ARMY MEDICAL CORPS

TERRITORIAL ARMY

Capt J N Russell to be Maj
Lts J R Hamerton and J R Dawson to be Capts
The annual competition for the Territorial Army Ambulance Challenge Shield will be held at the Royal Army Medical College, Millbank, London, S.W.1, on Saturday, June 19th.

ROYAL AIR FORCE

Flying Offrs promoted to the rank of Flight Lts: R F Courtin, R M Outfin, J H Neal, D G Smith, R H Pratt, S G Gordon, J C Bowe, G P Jones, and J G Rountree
Flight Lt C F R Briggs to R.A.F. Station, Honington
Flying Offrs W T Buckle to R.A.F. Station, Church Fenton, and D W I Thomas to R.A.F. Station, Donabristle

Dental Branch—H B Shay is granted a non permanent commission as a Flying Offr for three years on the active list and is seconded for duty at Guy's Hospital.

Flying Offrs A P Britton and A J S Wilson promoted to the rank of Flight Lts.

INDIAN MEDICAL SERVICE

Col I M Macrae C.I.E., O.B.E. *K.H.P.*, to be Maj Gen
Lt Col W L Watson, O.B.E., to be Col
Indian Medical Department—Sub-Maj and Hon Lt Ras Sahib Madho Parshad to be Hon Capt

CORRESPONDENCE

ADLER AND THE GENERAL PRACTITIONER

To the Editor of THE LANCET

SIR,—May I add one thing to the excellent account of the late Prof. Adler in your issue of June 5th. It has been well said that a number of medical men after meeting Adler seemed to have found something entirely new and satisfying in their medical practice, not just new knowledge but a new outlook and a feeling that what they were doing was really worth while. I should like to corroborate that remark and I think the rapid success of the Medical Society of Individual Psychology which now numbers 127 members, chiefly general practitioners, is evidence of its truth. No one attending those meetings can fail to observe the fresh interest which the Adlerian concept has stimulated in the members and the way in which the very type of case which was most tiresome to them has now become one of the most interesting. In view of the wide prevalence of the minor as well as the major forms of psychoneuroses I think it is clear that Adler's influence will play an important part in increasing the efficiency and helpfulness of general practice.

I am Sir yours faithfully

W LANGDON BROWN

Camden Square W June 25th

DIAGNOSIS AND TREATMENT OF GASTRIC AND DUODENAL ULCER

To the Editor of THE LANCET

SIR,—Sir Arthur Hurst's comments on my paper require brief replies—

1 *Carcinoma*.—I used the term relatively uncommon deliberately. One need hardly quote figures to show that one sees 1 case of carcinoma for every 10 or 12 of simple ulcer.

2 *Incidence of gastric and duodenal ulcer*.—Since the general population is composed as to 90 per cent of the "hospital class" it is obvious that there need be no quarrel between Sir Arthur Hurst and myself on this score. Possibly the eminent writers of text books have taken their figures exclusively from their rich patients. But I am still inclined to think that surgical experience determined the usually quoted figures of 4 duodenal to each gastric ulcer.

3 *Blood in stools*.—I specified the benzidine reaction. The spectroscope was not used nor do I see the value of it in this connexion. One requires a test with a certain threshold very much as the Fehling reaction is designed to ignore the normal 100 mg per 100 c.c.m. of glucose in urine. The tests were performed by the biochemical laboratory of the hospital under the direction of Mr F. Morton B.Sc. A.I.C. I cannot see that other statements made by Sir Arthur under this heading contradict anything written in my paper.

4 *Diagnosis*.—Sir Arthur has quoted from my paper in a way that has misrepresented what I said which was that while iron deficiency was the most likely cause of anaemia with achlorhydria it was safest to assume that ulcer was present until proof to the contrary was forthcoming by negative stool tests, absence of blood from test meal and negative radiogram. I also as stated in my paper have not seen achlorhydria with duodenal ulcer. My incidence of achlorhydria with gastric ulcer was 2 in 39. Sir Arthur's is 1 in 114. No doubt if one accumulated

several hundred cases the true incidence would be found but I would not be particularly concerned if it were proved that I were wrong and that achlorhydria does not occur in gastric ulcer. Faber and others have shown that 'gastritis' with diminished acidity is the usual forerunner of ulcer whether acid is absent or only just present probably depends merely on the number of functioning cells remaining.

5 Sir Arthur gives no reasons for his advocacy of surgery. I remain convinced, as stated in the paper that beyond perforation, surgery is only justifiable for gross anatomical deformities which make life intolerable and which are unaffected by some months of medical treatment.

I am Sir yours faithfully

Birmingham June 5th.

DUNCAN LEYS

INFECTION THROUGH THE OLFACATORY MUCOSA

To the Editor of THE LANCET

SIR,—Not being a chemist by training I am diffident of entering too deeply into what may be a purely chemical controversy nevertheless I believe that Dr. Pickworth's letter in your issue of May 1st merits some reply.

When our work was begun I was of Dr. Pickworth's opinion that we were using a chemical solution. However we soon discovered that no matter what the origin of the many samples of potassium ferrocyanide and iron ammonium citrate we used when equal volumes of 10 per cent. solution of these two chemicals are mixed granules and aggregates of granules are formed. On first mixing the fluid remains clear but after a few seconds turns cloudy. If this change be followed under the microscope it will be seen that the clouding is due to a formation of particles (singly or in aggregates) throughout the fluid. The particles vary in size but many are about 0.2 micron in diameter which is of the same order of magnitude as the prussian blue particles demonstrable in the tissues after fixation and only slightly smaller than pneumococci. They can be thrown out of suspension in an angle centrifuge quite an appreciable amount being deposited in 15 minutes at 3500 r.p.m. We have also noted that the formation of these particles is brought about in part by visible wave lengths at the blue end of the spectrum actually by those waves shorter than 5000 Å. Any mixing of the two solutions by daylight will certainly cause the particles to form moreover we have been unable to prevent the formation of particles albeit in smaller numbers even by carrying out the manipulations in the dark room.

As to the chemical nature of the particles or granules used I believe that they are prussian blue. My belief is based largely on the personal assurance given me by many expert chemists. Perhaps also I may be allowed to quote from Mellor (*Modern Inorganic Chemistry* 8th edition London 1936) he says that prussian blue is formed when a solution of potassium ferrocyanide is added to a solution of a ferric salt. It is insoluble in hydrochloric acid but soluble in oxalic acid forming a deep blue solution. Besides the insoluble prussian blue a soluble or colloidal prussian blue is formed when a ferric salt is added to a solution of potassium ferrocyanide or a ferrous salt to a solution of potassium ferri-cyanide. By the addition of salt to the solution the soluble prussian blue is coagulated or salted out and the

precipitate is then 'insoluble' Prussian blue" (The italics and inverted commas are Mellor's)

It will be clear to Dr Pickworth, I hope, that if I have misinterpreted Le Gros Clark I have done so not because of mere assumption on my part, but because our investigations had led to the belief that Clark was using a suspension of particles. Indeed it is difficult for me to believe that he did not, despite Dr Pickworth's statements to the contrary. I must, however, take this opportunity of thanking Dr Pickworth for again drawing my attention to this point and leading me to study the matter further. Since reading his letter I have reinvestigated most of the former work and have taken the further step of testing the behaviour of our mixture of potassium ferrocyanide and iron ammonium citrate when subjected to ultra filtration through a Cellophane membrane. This has shown that soluble prussian blue in our mixture will pass through membranes which hold back serum proteins. It would seem, therefore, from this most recent work that, in actual fact, we are dealing with a suspension of prussian blue particles in a solution of prussian blue. Any further information which Dr Pickworth has on the point would be most welcome.

Finally, even leaving the "supposed passage of particles" out of the question, I cannot agree with Dr Pickworth that I used bacteriological methods only. Surely he does not consider the direct microscopical demonstration of pneumococci in the perineural spaces, in the subarachnoid space, and in the cells of the pia mater within two minutes of their being instilled into the nose a bacteriological method only.

I am, Sir, yours faithfully,

G W RAKE

Connaught Laboratories, University of Toronto
Canada, May 26th

MIDDLE-EAR DISEASE

To the Editor of THE LANCET

SIR,—Otitis media is of perennial interest to general practitioners, and your weighty remarks thereon prompt me to record the following experience. At the end of 1930 I treated for a long time a man with the most profuse and persistent otorrhoea I can remember, and by the irony of fate it followed on the only paracentesis I had ever performed—I believe quite correctly. In despair he asked me to try anything short of operation so after some months I one day washed out his ear with staphylococcus antiviral liquid and left some of the fluid in situ. The result was dramatic, for he failed to come again as instructed, and when, after six days, I searched him out he said he was cured. Actually he had had no discharge for three days and only a slight dampness since. After a few more treatments his ear was quite dry and has remained so.

This was, I believe, the first such case ever treated in this way and it was certainly the start of the fairly widely adopted treatment of otitis media by antiviral preparations (not that all cases respond so rapidly as he did). It is, unfortunately, often considered unscientific because it is said to lack a sound theoretical basis, but surely the scientific attitude is to observe and try to appreciate results and then seek to find the underlying theory. Whatever the rationale of the method may be, I know of no more convincing demonstration of the potency of a biological preparation than to watch the extraordinary way it will determine improvement in a few hours in an inflamed, and even bulging, ear drum, which may return to normal within two or three days.

One of my earliest cases was that of my own little son, aged three, who for a whole day had been crying with earache while I tried the effect of one after another of the ordinary and proprietary preparations without avail. To watch him settle down to a quiet sleep within half an hour of instilling the antiviral was one of the most gratifying experiences of twenty odd years' practice, and it has been no less satisfactory to hear of similar results in nearly every case of earache I have treated in this way since. Later on, at my suggestion, antiviral was put up in a jelly form which is much easier to use in these cases and gives results almost equally good.

Where the issues are so serious I would not like to seem to say a word against the operation of paracentesis, but I would like to urge that practitioners and otologists alike should carry a tube of antiviral jelly in their bags, and that they should instil some as soon as they have had a good look at the tympanum. They can then make preparations for paracentesis if they wish, but unless my almost consistent experience is exceptional they will usually find that in a short time the pain will have gone and the need for operation will have passed. What the effect would be in the so-called silent cases or tuberculous ones I do not know, nor do I prophesy, but I am sure that it is a line of treatment abundantly worth trying.

I am, Sir, yours faithfully,

Winsford, Cheshire, May 29th

W N LEAK

LEFT INFRAMAMMARY PAIN

To the Editor of THE LANCET

SIR,—I read with much interest the article on this subject in your issue of May 29th by Drs Shirley Smith, Stephen Hall, and Jocelyn Patterson, especially on "the disturbance of the heart muscle either from lack of sugar supply or inability to metabolise sugar." Having had a large experience of such cases in hospital and private practice I would like to refer to the more common causes of this pain and effective methods for its relief. Exposure of the chest to cold, physical fatigue, and a rheumatic temperament are among the many causes of this trouble. Treatment after consideration of the history, occupation, and temperament and a thorough examination of the heart and circulation have been made with a negative result, the probability is that the intercostal muscles are affected and that rest is the more hopeful method of giving relief. I have several strips of plaster about 1½ in wide of sufficient length to extend from the spine to the middle of the chest in front. If possible the patient stands erect steadying his body by holding his hand to a mantelpiece, the plaster is first fixed on the spine and firmly brought round the side of the chest. Three or four strips are generally sufficient. The effect is sometimes quite dramatic. For the next few days treatment of the possible cause is carried on. If after removal of the strips the pain remains the treatment is repeated. At times a dull ache remains, when a liniment containing menthol and methyl salicylate will complete the cure.

I am, Sir, yours faithfully,

CHARLES W CHAPMAN

Wimpole street W June 5th

METHODS OF DESTROYING BED BUGS

To the Editor of THE LANCET

SIR,—In your issue of May 1st Mr J M Holborn makes certain criticisms of the use of heavy coal tar naphtha for the destruction of bed bugs, according to the method we described (*Lancet*, Feb 27th, 1937,

p 530) To these criticisms we offer the following reply:—

(1) *Toxicity to insects*.—To ensure a 100 per cent kill of both insects and eggs at a temperature of 65–70° F an exposure of at least 18 hours is necessary and we are not surprised at the poor results obtained by Mr Holborn in an experiment using an exposure of only 6 hours.

(2) *Toxicity to man and animals*.—Naphtha vapour has an irritant action on the eyes and for this reason gas masks are worn during fumigation. The specification framed to govern the supply of naphtha makes no attempt to ensure the absence of mesitylene. A proportion of this together with its isomer pseudocumene is present; but from the results of an extensive series of toxicity experiments with animals we are satisfied that danger to man from this constituent or the naphtha in its entirety is not to be apprehended.

(3) *Fire and explosion risk*.—While all reasonable care must be exercised when naphtha is being handled or sprayed we are of opinion that the concentration of vapour which might be expected to leak into adjoining premises would not inflame when brought into contact with a naked light. In regard to explosion risk the vapour concentration at 65° F is only one-eighth of the lowest explosive concentration.

(4) *Odour*.—The odour of naphtha vapour is penetrating but not unpleasant and few complaints have been received from the occupants of adjoining houses.

We should like to emphasise that whilst naphtha is also a contact insecticide it is the lethal property of the vapour which makes it so efficacious for the destruction of bed bugs in infested houses. Since our original publication we have improved the technique of distributing the vapour in rooms by the use of blankets wetted with naphtha and sus-

pended near the ceiling and down the walls. In this way all likely harbourages including ceiling cracks will receive a lethal concentration of vapour. Mr Holborn points out that the quantity of naphtha used is ten times the lethal dose and it may be stated that this amount is necessary to allow for loss of vapour through diffusion absorption and air changes.

Mr Holborn, and later Mr Mellanby indicate the possibilities of contact insecticides for use in occupied houses. Such measures are helpful in dealing with a light infestation but in our opinion a heavy infestation can only be dealt with successfully by a fumigation process. The premises must be vacated but the furniture can be treated in situ with heavy naphtha. Experiments have been carried out which promise well for the use of heavy naphtha for van fumigation and further research in this direction is in progress.

We agree as to the desirability of knowing the nature and amounts of the toxic constituents and would point out that research into this question is in hand. If and when this information is available it must not be forgotten that the isolation of the lethal constituent or constituents would give a product of greatly increased price and unless possessed of exceptional properties this would hardly be expected to replace naphtha for practical fumigation purposes.

We are Sir yours faithfully

S. A. ASHMORE

Government Laboratory Clements Inn Passage and

A. W. McKENNY HUGHES

Dept. of Entomology, British Museum (Natural History)

June 8th

OBITUARY

WILLIAM FRYER HARVEY M.B. Oxon

Dr W. F. Harvey who died on June 4th at his home in Letchworth at the age of 52 was an Oxford medical graduate qualifying belatedly in 1917 after a period of ill health. But his chosen profession early surrendered him to letters where his heart was from the beginning. One of a family of seven brothers and sisters in a household full of intellectual stimulus he was always reading widely and devoutly and even as a child was rarely to be seen without a pencil in his hand. His book entitled 'We were Seven' which appeared less than a year ago contains a series of contemporaneous pictures of his youth for he was able apparently in writing it to reproduce his own feelings at the time of the happenings so that the book is neither a biography nor a psychological study but is an inquiry into the mind of the child in a happy family circle. Not that he lacked the faculty of judging—parenthood as is evident to those who noted his initials at the foot of a bogus report of the Hampstead branch of the Parent Study Association (*Lancet* May 6th 1933) when the problem parent was submitted to careful analysis and yet kindly analysis for Harvey a great interest was in the foibles of good people and as a satirist of the Society of Friends to which he belonged he did it a valuable service. Accounts of his life in the daily press have laid stress on an act of heroism when he was surgeon lieutenant in the Navy and completed an amputation on a wounded fellow officer in the engine room of a sinking destroyer for this act he was awarded the high distinction of the Albert medal but the incident almost escaped record because Harvey forgot about it himself taking it simply in his stride as part of

war time medical work. Pacific himself in thought and in practice he was always unwilling to accept security at the expense of others' danger and hazard.

Dr Harvey married Miss Margaret Henderson. He leaves two children a boy and a girl.

CHARLES H. SHORNEY WEBB, M.S. Lond F.R.C.S. Eng.

On June 1st Mr Shorney Webb died of infective endocarditis in the Middlesex Hospital where he received his medical education and where for a dozen years before the breakdown that crippled his life he had been a brilliant member of the honorary surgical staff. Webb writes a former surgical colleague had a fine academic career gaining honours and distinctions not only in the Middlesex school but also in the University of London; he was only the fourth Middlesex student to secure the M.S. degree and obtained marks qualifying for the gold medal on that occasion. During his tenure of a surgical readership at the hospital the wanderlust seized him and he served in the Balkan campaign of 1912. In 1914 the first day of the late war saw him eager alike for adventure and to place his talents at the disposal of the British wounded. Webb landed in the original Expeditionary Force with the fourth casualty clearing station a unit with which he remained until 1918 when he was appointed to the charge of a surgical division of the 24th general hospital at Etaples. At a time when opinion was still divided as to the desirability of exploration for gunshot wounds of the abdomen he was one of the first to operate for this type of injury. To Owen Richard of course belongs the credit of demonstrating and of urging the need of surgery in these particular

wounds of warfare, but the first considerable communication dealing with the subject was written by Webb and Milligan.

Elected in absentia to the honorary staff of his old hospital during the war years, he did not assume his duties until after the armistice. Possessed of a far greater operative experience than usually belongs to a newly appointed assistant surgeon, Webb proved himself also a fine teacher, acquiring a popularity with the students akin to that which he had enjoyed among his colleagues in his early days and in France, while his surgical advice and services were sought by his colleagues and their families. And later,

when he was again able to lead an active life, he became a valued operating surgeon to the Middlesex county council.

Webb's gifts were many. He was a fine linguist, a lover of music, he played piano and organ, he loved churches and old ecclesiastical architecture, and the memory may still linger in the minds of his war comrades of the strains of some church organ, by strange caprice intact, pealing forth from a ruined church without roof, with walls wide open to the air, an anthem perchance strange to the rude ears of that time, and within a debonair surgeon playing intently and with an exquisite skill.

G G T

PUBLIC HEALTH

The New Scottish Maternity Services

THIS week local authorities of Scotland have been called upon to submit schemes under the Maternity Services (Scotland) Act, 1937, which came into operation on May 16th. The schemes must secure that there are available to every woman who is to be confined in her own home and who applies to the local authority, facilities for—

(a) the services of a certified midwife before and during childbirth and until the end of the lying-in period,

(b) medical examination and treatment during pregnancy, including at least three prenatal examinations,

(c) medical supervision during childbirth and the lying-in period,

(d) medical examination at least once after the expiry of one month after childbirth

(e) the services of an anaesthetist when recommended by the medical practitioner, and

(f) the services of an obstetrician where necessary and practicable

The general object of the Act is to provide, for women who are to be confined in their own homes, care and treatment based on the team work of doctor, midwife, and consultant. This is a much wider object than that of the English Act of last year, which provided only for a service of midwives. The maternal death rate is much higher in Scotland than in England and the conditions of midwifery practice are different, doctors engaging in it to a greater extent. A Government grant, equivalent to half the additional expenditure involved but scaled up or down according to the needs of the area, will be payable on the new schemes. Fees will be paid by the women in so far as they are able to pay, but no charges will be made to the necessitous, and insured women, the wives of insured men, and others in like economic circumstances are likely to obtain the whole range of services for an inclusive fee that will be little, if at all, more than they pay at present for a midwife alone. Local authorities are asked to aim at giving the women as wide a choice as is practicable of doctor and midwife. Though they must provide the services specified in the Act, they will have a fairly free hand in the actual arrangements they may make. Thus they may arrange to have the midwifery service provided through voluntary associations or they may themselves pay midwives in private practice on a fee basis, or they may employ a whole time salaried staff of midwives. As regards the medical services, the Department suggest that probably most authorities will throw this service open to all general practitioners who desire to take part in it. The Department, however, will be prepared to consider alternative proposals. The remuneration of the doctors to be employed is under discussion.

Consulting obstetricians, the Department say should be obtainable in the four teaching centres and surrounding areas and in places where maternity hospitals employing resident obstetricians have been established. "If obstetrical specialists are made widely available throughout Scotland, a great step will have been taken towards raising the standard of domiciliary midwifery. Accordingly, the Department will expect local authorities to make every reasonable effort to overcome any difficulties with which they may be faced" in obtaining this expert service.

Compensation will be paid to midwives who, within a specified period, surrender their certificates either voluntarily or by direction of the local authority. Half the cost of this compensation will be refunded by the State.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED MAY 20TH, 1937

Notifications—The following cases of infectious disease were notified during the week: Small pox, 0; scarlet fever, 1477; diphtheria, 910; enteric fever, 28; pneumonia (primary or influenzal), 765; puerperal fever, 39; puerperal pyrexia, 138; cerebro-spinal fever, 24; acute poliomyelitis, 9; polio-encephalitis, 1; encephalitis lethargica, 5; continued fever, 1 (St. Pancras); dysentery, 26; ophthalmia neonatorum, 94. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 14th was 2918 which included: Scarlet fever 750; diphtheria 813; measles 51; whooping-cough 485; puerperal fever 23 mothers (plus 14 babies); encephalitis lethargica 282; poliomyelitis 1. At St. Margaret's Hospital there were 27 babies (plus 18 mothers) with ophthalmia neonatorum.

Deaths—In 123 great towns, including London there was no death from small pox, 2 (0) from enteric fever, 10 (0) from measles, 4 (1) from scarlet fever, 11 (4) from whooping cough, 25 (4) from diphtheria, 60 (15) from diarrhoea and enteritis under two years, and 22 (5) from influenza. The figures in parentheses are those for London itself.

Tottenham and Nottingham each had one death from enteric fever. Birmingham 3 deaths from measles. There were 3 fatal cases of diarrhoea at Croydon, Liverpool, Birmingham, and Stoke-on-Trent.

The number of stillbirths notified during the week was 307 (corresponding to a rate of 30 per 1000 total births), including 41 in London.

CENTENARY OF CARDIFF ROYAL INFIRMARY—During last week as part of the centenary appeal of this hospital for £250,000 a special service was held at St. John's Church and a centenary commemoration dinner at the City Hall, at which Lord Horder was the principal guest. On June 6th Lord Dawson broadcast an appeal for the hospital on the National Programme.

University College Hospital

Men students of University College Hospital who have held a resident appointment there are invited to apply for a Bilton Pollard fellowship of an annual value of £850. Further particulars will be found in our advertisement columns.

London Hospital

The King has consented to become patron of this hospital. Queen Mary will continue to hold the office of president. As a memorial to the late Sir Ernest Morris, it is proposed to extend the clinical laboratories, towards the cost of which he had collected £3000.

St Bartholomew's Hospital

Particulars are given in the Medical Diary in another column of a post graduate course which will be held at this hospital on June 17th, 18th, and 19th. The course is open to all medical men but early application should be made to the dean of the hospital.

Pharmaceutical Society of Great Britain

At the June council meeting Mr Thomas Marns was re-elected president, Mr E T Neathercoat was re-elected treasurer, and Mr Thomas Guthrie was elected vice-president. Mr J H Franklin was co-opted a member of the council to fill the vacancy caused by the death of Mr E H Simmons.

Joint Tuberculosis Council

At the May meeting it was announced that 750 copies of the Council's memo on Tuberculosis Among Nurses had been printed and that the Medical Research Council were considering the republication of the memos by Drs W H Tytler and Peter Edwards on The Microscopic and Cultural Examination of Sputum. After a discussion on the Empire Conference on the Care and After Care of the Tuberculous it was decided to form a committee—comprising Dr S Vere Pearson (convener), Profs W W Jameson and S Lyle Cummins, with Drs Jane Walker, J B McDougall, F R G Heaf, and F W Goodbody—to consider what help this council can give the colonies in their effort to control tuberculosis. The question of holidays with pay was placed on the agenda for the next meeting.

Medical Tour to Russia

The Society for Cultural Relations is this year again organising a tour for medical visitors to the Soviet Union. The group will leave London on July 17th and visits will be paid to Leningrad, Moscow, Kharkov, and Kiev. They will return to London on August 8th. Opportunities will be given to members to visit hospitals, dispensaries attached to factories, venereal disease clinics, and prophylactoria (preventive clinics). A member of the society's medical and public health section will lead the group, and if possible arrangements will be made for members to see any specialised branch of medicine in which they are interested. Further information may be had from the secretary of the society, 98, Gower street, London, W C 1.

Fellowship of Medicine and Post-Graduate Medical Association

An all day course in gynaecology will take place at the Chelsea Hospital for Women from June 14th to June 26th. Courses have been arranged for M.R.C.P. candidates in neurology at the West End Hospital for Nervous Diseases, in the afternoon (June 21st to July 3rd), in tuberculosis at Preston Hall, Maidstone, on July 3rd. Other courses will be held in proctology at St Mark's Hospital (July 5th to 10th), in dermatology at the Hospital for Diseases of the Skin, Blackfriars (afternoons July 12th to 24th), in urology, at All Saints Hospital (afternoons, July 12th to 31st). Week-end courses will be given in general surgery at the Prince of Wales's Hospital (June 19th and 20th), in diseases of the heart and lungs at the London Chest Hospital, Victoria Park (July 3rd and 4th), in medicine and surgery at the Miller General Hospital (July 10th and 11th). Courses are open only to members and full particulars may be had from the secretary of the Fellowship, 1 Wimpole street, London, W 1.

St Thomas's Hospital

On Tuesday, June 29th at 3 P.M., Sir Farquhar Buzzard, regius professor of medicine in the University of Oxford, will distribute the prizes at this hospital.

Birmingham Hospitals Centre

It is thought that a portion of this great centre may be open next spring. The foundation stone was laid in October, 1934. The first part of the scheme comprises a general hospital of 500 beds complete with all services a nurses' home, and the medical school buildings. The nurses' home will accommodate 350.

A Fever Hospital in Spain

In view of the increasing danger of epidemics in Spain the Holborn and West Central London Committee for Spanish Medical Aid (8, Gordon square, W C 1) was asked a month ago to provide a bacteriologist and equipment for a fever hospital on the Madrid front. Within a fortnight it had sent out to Valencia a doctor, a bacteriologist, and an assistant, with enough material for a small laboratory. An hotel has been taken over at Cuenca 70 miles from Madrid, which will hold 150–200 patients, but it lacks equipment. Beds, bedding, and linen can be bought cheaply in Spain, and money for this is urgently needed. The initial outlay was £300, and the bacteriologist has now called for a further £200 for buying additional equipment in Spain. The committee is at present able to send only £50 and is trying to raise the further £150 within a week.

Prostitution and Venereal Disease

The International Abolitionist Federation held a congress in Paris from May 20th to 22nd, when a number of delegates, both French and foreign, paid tribute to the Minister for Public Health, M. Henri Sellier, for taking responsibility for the first Bill introduced by a French Government which forbids traffic in women in all its manifestations. After hearing reports from Dr Hermans (Holland), Prof Gemählung (France), and Miss Alison Neilans (general secretary of the Association for Moral and Social Hygiene) the congress adopted resolutions pointing out that prostitution cannot in itself constitute a punishable offence but that public authorities cannot be indifferent to its public manifestations. The measures adopted to stop street solicitation must be applied to men as well as to women, their enforcement should be entrusted to the common law police and must not be arbitrary. A service of women police should be everywhere established with the special duty of assuring the protection of children and to give assistance to women who need their help. The rôle of the law, in combating prostitution, should consist, above all, in forbidding procuration in all its forms. The modern struggle against venereal diseases must be based on liberty, treatment must be voluntary, free, and confidential, and it is unjustifiable to impose coercive measures on certain sections of the population.

Appointments

BORD, M R E M B Dubl. Lady Resident Medical Officer at the Ilford Maternity Home.
 CRAIG, JENNY D M B Manch. Assistant School Medical Officer for Huddersfield.
 DINGOLE, W S M Ch Orth Liverp. F.R.C.S. Eng. Hon. Orthopaedic Surgeon to the Bootle General Hospital.
 FLEMING, H T M B Dubl. F.R.C.S. Eng. and Irel. Surgeon Superintendent at the Fermanagh County Hospital Enniskillen.
 GRAY, S T G M B Aberd. D.P.H. Assistant County Medical Officer and Assistant School Medical Officer for West Suffolk.
 MCGUCKIN, FRANCIS M D Durh. F.R.C.S. Edin. Hon. Assistant to the Throat and Ear Department of the Royal Victoria Infirmary, Newcastle-upon-Tyne.
 RICKOW, A V M B Lond. D.M.R.E. Hon. Radiologist to the Princess Louise Kensington Hospital for Children.
 ROSE, I. M B Leeds. Resident Medical Officer at the St Helen General Hospital, Barnsley.
 SAINT, J H M D Durh. M.S. Minn. F.R.C.S. Eng. F.A.C.S. Hon. Assistant Surgeon to the Royal Victoria Infirmary, Newcastle-upon-Tyne.
 SCHOLEFIELD, JOHN M B Leeds. F.R.C.S. Eng. Resident Surgical Officer at the Prince of Wales's Hospital, Plymouth.
 Certifying Surgeon under the Factory and Workshop Acts: Dr J L HILL (Newport District, Monmouth) Dr J S Moore (St Austell District, Cornwall).

PARLIAMENTARY INTELLIGENCE

HEALTH AND HOUSING

In committee of the House of Commons on June 8th on a supply vote for the Ministry of Health, Sir KINGSLEY WOOD, Minister of Health, said that the estimates for health services amounted to over £22,000,000 and the total for all the departmental services reached £108,000,000. There was an increase of over £500,000 compared with the current year. The slum clearance campaign was responsible for an additional sum of £500,000 in respect of new houses and a new item in the estimates was £207,000 for grants under the Midwives Act which would come into operation in a few weeks. Considerable activity had been displayed by local authorities in the provision and extension of sewers and the disposal of sewage, and there had been increased provision for public recreation. In 1920 the total amount of loans for public recreation was £1,260,000; last year it was £3,200,000.

THE PUBLIC HEALTH BALANCE-SHEET

Taking the credit side of the public health balance-sheet he could say that motherhood was safer than it had been for 18 years, inasmuch as maternal mortality for every 1000 live births was the lowest recorded since 1922. The tuberculosis death rate continued to decline and there had been a steady decline in mortality from infectious disease. There had also been a substantial decrease in the prevalence of diphtheria. There was however another side to the balance sheet—cancer. While many more lives were now being saved by early diagnosis of the disease, cancer remained one of the most deadly enemies of mankind and was the single heaviest item on the debit side of the national health balance-sheet. Colds and influenza still accounted for nearly a quarter of the absences from work in this country, and while it was true that last year's influenza epidemic was what was called clinically mild, he could assure the committee on the best authority that there was not likely to be a further visitation on the same scale for two years.

MOVEMENTS OF POPULATION

The estimated mid-year population in 1930 of England and Wales was 40,830,000, an increase of 101,000 over the estimated mid-year population figure for 1935. The total number of births was 605,202, the birth rate per 1000 living being 14.8 or 0.1 per cent. higher than for 1935 and 0.1 above that of 1933, the lowest on record in this country. There were 405,704 deaths and the crude death rate per 1000 of the population was 12.1. This was 0.4 per 1000 higher than in 1935 and 0.7 above that of 1930, the lowest on record. The problem of population in this country was engaging increasing public attention and was a vital matter. Certain facts were already known in connection with it but before they could properly consider it they would certainly need to know many more. The birth rate, which in 1877 was 35.1 per 1000 living had now fallen to 14.8. It was told that to-day mothers had about half the number of children which their grandmothers had and they knew for instance, that in the next 15 years the total number of children aged five and over in public elementary schools might fall by as much as 1,000,000. The population in the immediate future would contain a much larger proportion of older people. They could not of course say if all those conditions would continue; it was not necessary to be pessimistic about the matter as to whether for instance they would have to take into account a stationary or a declining population. Two inquiries were in progress on this matter, one by the Registrar-General and the other by the Population Investigation Committee, a voluntary body under the chairmanship of Prof. Carr-Saunders. There was close co-operation between the two inquiries.

The present methods of obtaining and keeping important vital statistics concerning this matter were unsatisfactory and incomplete and further information was undoubtedly necessary in connexion with fertility. The existing birth rate statistics showed the number of children born in the population as a whole but fertility statistics must relate to births of particular parents and show the kind of parents and in what conditions they produced many or few children. Other particulars required were the ages of the parents, the duration of the marriage, the date and order of the births, and matters of that kind. If those facts were available it would be possible to investigate much more adequately the conditions and circumstances which appeared to encourage or discourage the production of children. He was considering the best steps that could be taken to see that these particulars were procured with due regard to their confidential and personal nature.

BUILDING PROGRAMME

There had been a record total in house building with the erection of some 318,000 houses compared with 325,000 last year and 329,000 in 1934-35. Rural housing presented its own special problems and rural district councils were now concentrating on slum clearance and their original programmes had been increased by approximately two-thirds. The present programme covered some 55,000 houses of which nearly 23,000 were to be dealt with under clearance orders. He had asked the central advisory council to consider further steps so far as rural housing was concerned. He hoped to receive a report soon and would then consider what further action might be necessary in the light of the report. He would ask the House to approve at a later date the extension of the present rate of subsidy both for slum clearance and for the abatement of overcrowding so as to apply it to houses completed up to Dec 31st 1938.

NOTES ON CURRENT TOPICS

Milk supply and Animal Diseases

On June 7th in committee of the House of Commons, on a vote for the Ministry of Agriculture, the Minister Mr. W. S. MORRISON said that the milk scheme had so far rendered possible a start on the great question of improving the quality and increasing the consumption of this vital food. In the last financial year the amount of milk sold in the liquid market increased by 14,500,000 gallons and the quantity for manufacture had increased by 8,000,000 gallons. There had been an immense increase in the number of persons producing milk which reached an accredited standard. Before the scheme was introduced there were only 800 Grade A licences but now there were nearly 20,000 producers of milk of accredited standard.

With regard to poultry disease the technical committee which had been set up was considering the present methods of distribution of hatching eggs, day-old chicks, and feeding stuffs. Strenuous efforts were being made to lessen the toll of mortality among the chickens. The utmost research into the pathology of diseases which had caused the losses among poultry was being continued by the scientific bodies concerned. Any further measures which might be taken would be of an administrative character when the new central veterinary service came into being. Referring to the immense burden of animal diseases which cost the industry something like £11,000,000 a year, the right hon. gentleman said that a great deal of work had been done in the past by local authorities and by the Ministry's veterinary service and practical results had been obtained. During the last financial year there were 13 centres of infection from foot and mouth disease and these comprised 60 separate premises. The policy which had been carried out had had the result that the disease had not become

endemic in this country, as it had in some of our continental neighbours. It could be regarded as a hopeful sign that the incidence of this disease on the Continent seemed to be declining. There was a slight increase in the incidence of anthrax, but a satisfactory decrease in swine fever and sheep scab. There were still diseases like tuberculosis, contagious abortion, mastitis, and others which took an immense toll of our cattle. The proposals which he had recently announced would involve legislation and represented a very much bigger step forward and a much more resolute attack on this problem than had yet been made. He hoped, with the cooperation of those concerned, that it would yield substantial results in freeing the industry from a wasteful burden.

Replying to the debate which followed, Mr Morrison said that the Ministry of Agriculture had under investigation a diagnosis by which it might be possible to detect John's disease in its early stages and not only effect a cure but prevent infection. This was being tried out, and they hoped in a short time to know whether it was a good thing or not.

Some Colonial Health Problems

In the House of Commons on June 2nd on a Colonial Office vote Mr Ormsby Gore, Secretary of State for the Colonies, referred to social conditions in Hong-Kong and the Straits Settlements. The reports, both majority and minority, of the mu-tsai question had, he said, been sent to the governors of these two colonies asking for their considered views. In both colonies the predominant element was a shifting Chinese population among which for centuries there had been social customs repugnant to British ideas. The British Government has set its hand to eradicate or mitigate the evils from these customs and was not going to turn back. But despite all its efforts mu-tsai and other customs went on, and devices such as adoption were resorted to in order to get round the law. There was, however, a growing public opinion of a more Western character and it was essential for real success to carry the Chinese population with them.

Mr LUNN said there was no method of dealing with the buying and selling of human beings except by total abolition. He went on to deplore the conditions of health in the West Indies, where malaria and typhoid were common, food was poor and lacking in nutritive value, sanitation was bad, people were living in overcrowded conditions, wages were low, and unemployment rife.

Mr DE ROZSCHILD recalled an investigation made by the Ross Institute showing that on the seial estates in East Africa the work performed by native labourers was only a sixth of the value of that done by Malayan labourers. This could be attributed to defective sanitation, lack of malarial control, poor nutrition, and bad working conditions in general.

Miss HORSBROUGH said while they could not abolish the system of mu-tsai all at once, there should be immediate notification of the transfer of children under the age of 12 and a register of all who were living away from their family, up to the age of 16 or 18.

Sir ERNEST GRAHAM-LITTLE compared the state of hygiene in East Africa with that on the West Coast, where the land was largely held by the natives. In Kenya the density of population in the native reserves, up to 250 to the square mile, exceeded that in British India. Most unfortunate was the inability of the native to pay the land tax in Nyasaland, where 50 per cent of the adult males had left the district to work in other parts of British Africa and the tribal system had broken up. He went on to compare health conditions among the Masai and the Kikuyu whose diet had weakened their resistance to disease, and to cite the alarming incidence of disease in certain parts of Kenya, where climatic conditions were favourable and venereal disease infrequent but anaemia, malnutrition, yaws, pyorrhea, malaria, hookworm, and tuberculosis were rife. These

were preventable diseases and it was a grave indictment against British rule for preventable diseases to prevail on this scale. The primary difficulty might be lack of funds but the research laboratory in Nairobi provided pathological data which would cost at the ordinary price over £20,000 a year. He hoped it would be possible for the Colonial Office to provide further assistance for medical research.

Mr SORESENSEN noted the decline in physical well-being of the natives mentioned in recent reports from the Gold Coast, where the medical staff had declined and less personal attention could be given. In 1929, he said, 90 medical officers attended to 250,000 patients, whereas in 1935 there were only 66 medical officers for 273,000 patients. There was a shortage of staff for the treatment of leprosy and nothing being done to investigate the incidence of silicosis and tuberculosis. A class of native capitalists now growing up unaccustomed to stringent public health and other restrictions might easily create conditions in which ill health was bred. He understood that only 10 per cent of the children of school age were receiving education.

Mr ORMSBY-GORE, replying to the debate, claimed that on the whole conditions were better in the British colonial empire than in any other, and that remarkable progress had been made in the last ten or fifteen years. Before incurring expenditure for medical research he must take advice from the Medical Research Council. The causes of most tropical diseases were known, the only way to deal with malaria was to kill the mosquitoes, and remarkable work in controlling yaws was being done by the British medical staff all over Africa.

On June 8th, in the House of Lords, the Widows', Orphans', and Old Age Contributory Pensions (Voluntary Contributors) Bill passed through Committee. The Poor's Allotments in Walton upon-Thames Bill was read the third time, and passed.

QUESTION TIME

WEDNESDAY, JUNE 2ND

Eradication of Animal Diseases

Mr HENDERSON STEWART asked the Minister of Agriculture if any provision was being made in his long-term policy for the eradication of disease in livestock, for reducing the mortality caused by grass sickness in horses, disease in poultry, and swine fever among pigs. Mr RAMSBOTHAM replied: The Government's policy for the eradication of disease in livestock which my right hon friend announced last Thursday, will extend, as circumstances permit, to all classes of farm animals, including poultry, although efforts will be mainly directed in the first instance to the eradication of disease among cattle. It is impracticable, in the present state of knowledge, to recommend immediate measures for reducing the mortality caused by grass sickness in horses. As regards poultry diseases my right hon friend is considering what steps can usefully be taken pending the report of the Technical Committee which is examining methods of distribution of breeding stock, hatching eggs, and day old chicks, with particular reference to mortality. The policy now in force for the control of swine fever will continue. Research in all matters is being actively pursued under the auspices of the Agricultural Research Council in collaboration with the Agricultural Departments.

THURSDAY, JUNE 3RD

Drunkenness in London during Coronation Week

Sir ALFRED BETT asked the Home Secretary the number of persons arrested for being drunk and disorderly in the County of London during Coronation week, and the number so arrested during the corresponding week of 1936. Sir SAMUEL HOARE replied: I regret that the particulars asked for by my hon friend could not be

extracted without a considerable expenditure of time and labour. I can, however, inform him that the number of persons charged with drunkenness of all kinds in the whole Metropolitan police district during Coronation week was 49. The figures for the corresponding week in 1936 are not available but the figure for the week preceding Coronation week was 405.

Watered Milk

Mr JENKINS asked the Minister of Health if his attention had been called to the report of the analyst for the county of Monmouthshire in which it was stated that the composition of a large number of milk samples was highly unsatisfactory as in a number of cases a large percentage of water had been added and in other cases the amount of fat removed was extremely high and what steps he proposed to take to ensure to the public that milk available for sale should be of the highest quality and free from adulteration.—Sir KINGSLEY WOOD replied: My attention had been called to this report and I am in communication with the county council in the matter.

MONDAY JUNE 7TH

Ventilation of the House of Commons

Mr BOSCH asked the First Commissioner of Works whether seeing the great advances made in recent years in the science of ventilation he would cause an investigation to be made to ascertain if the ventilation of this chamber could be made more satisfactory during the recess this summer.—Sir PHILIP SARGISON replied: I will send my hon. friend a copy of the note which was circulated to Members in July of last year. The investigations described in that note are proceeding but I do not anticipate that they will be concluded in time to enable improvements to be effected during the coming long recess.

Tuberculin tested Herds

Mr KELLY asked the Minister of Agriculture the number of approved tuberculin tested herds in Great Britain.—Mr BERNAYS, Parliamentary Secretary to the Ministry of Health, replied: On March 31st last there were 1795 herds in England and Wales licensed for the production of tuberculin tested milk. I am informed by my right hon. friend the Minister of Agriculture that there are at present in England and Wales 203 attested herds (which are tuberculin tested) on the register kept in his Department. This number includes 84 herds which are also licensed for the production of tuberculin tested milk.

Health of Spanish Refugee Children

Mrs CAZALET asked the Minister of Health what was the present position regarding the health of the Basque children who had been brought into this country.—Mr BERNAYS replied: According to the information in my possession the general health of these children is satisfactory but my right hon. friend is advised that it is highly desirable on grounds of public health that the number of children in the camp at North Stoneham should be reduced as speedily as possible and he understands that the National Joint Committee for Spanish Relief are in accord with this view. Vaccination is in progress, and about 900 of the 4000 children have already been transferred elsewhere. Five cases of typhoid fever, two cases of diphtheria and three cases of measles have occurred among the children. The patients have been isolated and appropriate precautionary measures have been taken against the spread of infection.

Nutrition and Minimum Income

Mr SARGISON asked the Minister of Health whether His Majesty's Government accepted Mr. Seebohm Rowntree's recently published estimate of the minimum income required to provide the essentials of life to which his attention had been drawn; and if not whether his department had made any such estimate of its own.—Mr BERNAYS replied: No Sir. My right hon. friend is advised that this estimate involves certain features that are very conjectural and no sufficient official material for the

preparation of an estimate of this kind is at present available.

Milk Rations for Enlisted Boys

Mr GRAHAM WHITE asked the Secretary of State for War the present amount of the daily milk ration for enlisted boys.—Sir V. WARREN, Financial Secretary to the War Office, replied: The daily ration of milk for enlisted boys is half a pint a day in addition to a variable quantity required for hot beverages, puddings, &c. The boys at the Army Technical School, Bechley, receive three-quarters of a pint a day in addition to one-quarter of a pint for other purposes.

TUESDAY JUNE 8TH

Ex Service Men in Mental Hospitals

Mr KELLY asked the Minister of Pensions the number of ex Service men under treatment in mental hospitals in this country for whose maintenance his department was responsible.—Mr H. RAKESBOTHAM replied: The number of officers, nurses, and other staff for whose treatment in mental institutions my department was responsible at end of May 1937 was 5770.

Scientists Employed by Ministry of Health

Mr MARKHAM asked the Minister of Health how many scientists were at present employed in the Ministry and how this figure compared with that of 1930.—Sir KINGSLEY WOOD replied: On April 1st 1937 the scientific staff of the Ministry other than the medical and dental staffs totalled 13. This figure included a chemist, chemical inspector, alkali inspectors and pharmacists. The corresponding figure at April 1st 1930 was 13. The medical and dental staffs at the same dates were respectively:—

Medical staff	1930	104	1937	115
Dental staff		12		10

In addition the department's establishment in both years included a post of serologist which was temporarily vacant on April 1st last and will shortly be filled.

Vacancies

For further information refer to the advertisement columns.

Abendorn Royal Infirmary—Two Hon. Asst. Ophth. Surgeons
Ashton Hosp.—1—Cas. O., at rate of £150
Ashton Hosp., Kent—Res. M.O. £150
Barnsley Baptist Hosp. and Dispensary—Jun. H.S. £200
Bath Royal United Hosp.—H.P., at rate of £150
Bedford County Hosp.—Second H.S. at rate of £150
Birmingham and Midland Hosp.—H.S., at rate of £130 £150
Birmingham Maternity Hosp.—H.S., at rate of £200
Birmingham Selly Oak Hosp.—Jun. M.O.'s, each at rate of £200
Bolton Royal Infirmary—H.P. and Two H.S.s, at rate of £200 and £150 respectively
Bromford Children's Hosp.—H.P. £150
Brighton Municipal Hosp.—Third Res. Asst. M.O. £300
Bromford Royal Eye and Ear Hosp.—Two H.S.s each £180
Brighton Royal Alexandra Hosp. for Sick Children—H.P. £150
Brighton, Royal Sussex County Hosp.—Cas. H.S. £150
Bristol General Hosp.—Two H.P.s, Three H.S.s, H.S. Obstet. O.H.S. to Spec. Depts each at rate of £250. Also Cas. H.S., at rate of £100
British Red Cross Society Clinic for Rheumatism—Polo-Jr.
Cardiff—King Edward VII Welsh National Memorial Assoc.—Res. Asst. Tuberc. M.O. £300. Also Res. M.O. for South Wales Sanatorium, £250
Carlisle Cumberland Infirmary—H.S. at rate of £155
Central London Broad Way and Lar Hosp. Gray's Inn-road—H.C.—Hon. Asst. to Out-patient Dept.
Charing Cross Hosp.—H.C.—Hon. Orthopaedic Surgeon. Also Hon. Clin. Asst. to X-Ray and Electrotherapeutics Dept.
Chelmsford C.C.—Temporary Tuberc. O. £15 per week
Chesterfield and North Derbyshire Royal Hosp.—Res. Surg. O. £200. Also H.S., at rate of £150
Chichester Royal Naval Victoria Hosp.—Jun. H.S., £125
City of London Mental Hosp. Stone N. Bedford—Asst. M.O. £100
Colegate, Sussex County Hosp.—H.S., £175
Cornwall Hosp.—L.—Hon. Surgeon
Conventry and Warwickshire Hosp.—Res. H.S. and Res. Cas. O. each £150
Down County Mental Hosp. Downpatrick—Jun. Asst. M.O.
Droghda Hosp. Greenwald, S.L.—Res. Living Room Officer at rate of £200. M.O. H.I. and H.C. each at rate of £115

- Durham County Council*—Deputy County M O H, £960 Also Asst Welfare M O, £500
- Durham County Hosp*—H S, at rate of £150
- Dumfries and Galloway Royal Infirmary*—Res H S, at rate of £100
- East Ham Memorial Hosp, Shrewsbury road, E*—Hon Surgeon to Orthopaedic Dept Also two Anaesthetists, each 1 guinea per session
- Elizabeth Garrett Anderson Hosp Euston road N W*—Hon Asst Phys Also H P First and Second H S s, and Obstet Asst, each at rate of £50
- Erith U D C*—Asst M O H and Asst School M O £500
- Exeter Royal Devon and Exeter Hosp*—H S, at rate of £150
- Gloucestershire Royal Infirmary and Eye Institution*—H S and H P each at rate of £150
- Hampstead General and North West London Hosp Haverstock hill N W*—H S, at rate of £100
- Hendon and Isleworth Borough*—Asst M O H and School M O, £500
- Hospital of St John and St Elizabeth 60, Grove End road N W*—Res H P, at rate of £100
- Hosp for Sick Children Great Ormond street W C*—Res M O for Country Branch at rate of £200
- Hosp for Tropical Diseases Gordon street W C*—H P, at rate of £120
- Hull Royal Infirmary*—Second H P and H S to Ophth and Ear Nose and Throat Depts each at rate of £150 Also H S for Branch Hospital, at rate of £100
- Ilford, King George Hosp*—Two H S s, each at rate of £100
- Institute for the Scientific Treatment of Delinquency Portman street W*—Med Reg £300
- Ipswich East Suffolk and Ipswich Hosp*—Cas O, H S to Orthopaedic and Fracture Dept and H S to General Surgeon and Genito Urinary Surgeon, each £144
- Kettering and District General Hosp*—H S and H P at rate of £160 and £140, respectively
- Lancaster County Mental Hosp*—Asst. M O £506
- Leeds General Infirmary*—Hon Asst Physician.
- Leeds Menston Mental Hosp*—Asst M O £350
- Leicester Royal Infirmary*—Res Radiologist, at rate of £200
- Liverpool County Mental Hosp Rainhill*—Second Asst M O £650 Also Asst M O 7 guineas per week.
- Liverpool Hahnemann Hosp, Hope street*—Res M O, at rate of £120
- Liverpool Royal Children's Hosp*—Two Res H P s and two Res H S s for City Branch, each at rate of £100 Also Res M O and Res Surg O for Heswall Branch, each at rate of £120
- London University*—Examinerships
- Manchester, Ancoats Hosp*—Cas O £250
- Manchester, Crumpsall Hosp*—Res Asst M O at rate of £200
- Manchester Park Hosp, Davyhulme*—Second Res M O, at rate of £225
- Manchester Royal Children's Hosp*—Sen M O, £300
- Manchester Royal Infirmary*—Technical Asst for Clinical Laboratory Work £200 Also Jun Asst M O (Locum) to Radiological Dept 8 guineas per week
- Manchester and Salford Hosp for Skin Diseases*—H S, at rate of £150
- Marie Curie Hosp 2 Fitzjohn's-avenue N W*—Asst Director, from £500 Also Res M O, £100
- Middlesbrough North Riding Infirmary*—Sen H S and Third H S at rate of £175 and £140 respectively
- Newcastle General Hosp*—Two H S s and H P each at rate of £150
- Newcastle upon Tyne Royal Victoria Infirmary*—Registrar to Throat and Ear Dept £100
- Northampton General Hosp*—H S at rate of £150
- North Middlesex and County Hosp Edmonton*—Asst M O, at rate of £350 Also Jun Res Asst M O at rate of £250
- Northingham General Hosp*—Res Cas O and H S to Ear, Nose and Throat Dept each at rate of £150
- Oldham Municipal Hosp*—Res Asst M O at rate of £200
- Paddington Green Children's Hosp, W*—H S at rate of £150
- Plymouth City Hosp*—Deputy Med Supt. £450
- Plymouth, Prince of Wales's Hosp Greenbank road*—H S at rate of £120
- Pontefract General Infirmary*—Jun Res M O at rate of £150
- Preston and County of Lancaster Royal Infirmary*—Two H S s each at rate of £150
- Princess Louise Kensington Hosp for Children St Quintin avenue W*—H S at rate of £120-£150
- Pulney Hosp, Lower Common S W*—Jun M O, at rate of £100
- Queen Charlotte's Maternity Hosp Marylebone road N W*—Res M O for Isolation Hosp at rate of £200
- Reading Royal Berkshire Hosp*—Cas O at rate of £150
- Rotherham Hosp*—H S for Ophth and Ear Nose and Throat Depts, £120
- Royal Air Force Medical Service*—Commissions
- Royal Dental Hosp of London 32 Leicester square W C*—Anaesthetists
- St Helens County Borough*—Asst M O H £500
- St Paul's Hosp for Urological and Skin Diseases Endell street W C*—H S, at rate of £100
- Salford Hope Hosp*—Asst. Res M O at rate of £200
- Salford Infectious Diseases Hosp*—Jun Asst Res M O, £200
- Salsbury General Infirmary*—Res M O £250 Also H P at rate of £125
- Sheffield Children's Hosp*—H S £100
- Southampton General Hosp*—Res Obstet M O £350
- Southampton Royal South Hants and Southampton Hosp*—Cas O, and Res Anaesthetist and H S to Ear, Nose and Throat Dept, each at rate of £150
- Southend-on Sea General Hosp*—Res Obstet O at rate of £100
- Southern Rhodesia Medical Service*—Government M O, £600-£700
- Stamford Rutland and General Infirmary*—H S at rate of £2.00
- Stoke-on Trent, Burslem Haywood and Tundall War Memorial Hosp*—Res H S at rate of £175
- Stoke-on Trent, Longton Hosp*—H S £160
- Stoke-on Trent, North Staffordshire Royal Infirmary*—H S for Aural and Ophth Dept, at rate of £150
- Sunderland Children's Hosp*—H P and H S each £170
- Sunderland Royal Infirmary*—H S £120
- Surrey County Mental Hosp Service*—Jun Asst M O s each £350
- Tilbury Hosp, Essex*—H S at rate of £140
- Tunbridge Wells Kent and Sussex Hosp*—H S and Cas O, £150
- University College Hosp, W C*—Bilton Pollard Fellowship, £550
- Wakefield Clayton Hosp*—Sen H S £250
- Warwick King Edward VII Memorial Sanatorium Hertford Hill Jun Asst. M O, £250*
- Walsford and District Peace Memorial Hosp*—H S at rate of £150
- West Ham Mental Hosp Goodmayes*—Jun Asst M O, £350
- Westminster Hosp Broad Sanctuary S W*—Dental Surgeon
- Willesden General Hosp Harlesden road N W*—Cas O at rate of £100
- Wolverhampton County Borough*—Asst M O H £650
- Wolverhampton Royal Hosp*—Hon Asst Surgeon and Hon Asst Gynaecologist
- Worcester Royal Infirmary*—H S to Gynaecological Dept. £140
- York County Hosp*—H P, £150

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Hanley (Staffs) Tunbridge Wells (Kent), and Wool (Dorset)

Medical Referee under the Workmen's Compensation Act, 1925 for ophthalmic cases arising in the Sheriffdom of Lanark Applications should be addressed the Private Secretary Scottish Office Whitehall London S.W.1 before June 30th

Births, Marriages, and Deaths

BIRTHS

- BATEMAN**—On June 3rd, at Eton avenue, N W, the wife of Mr Geoffrey H Bateman F R C S of a son
- BAYNES**—On June 5th at West Byfleet Surrey, the wife of Dr H Godwin Baynes of a daughter
- CORRY**—On May 20th the wife of Mr Cedric Corry, F.R.C.S., of Oxford, of a son
- KONSTAM**—On June 4th at Wildwood rise, N W, the wife of Dr Geoffrey Konstam of a daughter
- MACLEAN**—On June 3rd, at Devonshire place, W, the wife of Dr D Maclean of Harpenden of a daughter
- MUMFERY**—On June 5th, at Welbeck street W, the wife of Dr Raymond Mumfery, of a daughter
- MURTAGH**—On June 1st the wife of Dr Harold Murtagh, of Ripponden, of twins (a girl and a boy boy stillborn)
- PERCIVAL**—On June 1st, the wife of Lt Col E Percival, D.S.O., R.A.M.C., of Fleet Hants of a son
- SADLER**—On June 3rd at West Witterling Chichester, the wife of Dr O R Sadler, of a daughter
- WAYNE**—On June 4th, the wife of Prof Edward J Wayne F R C P of Sheffield, of a daughter
- WOODHOUSE**—On May 30th at Royal Naval Hospital Portland the wife of Surg Comdr G W Woodhouse of a son

MARRIAGES

- BOYD—PEARL**—On June 3rd at Hungerford Parish Church Douglas Herbert Stuart Boyd, M.B., to Margaret younger daughter of Mr A R Pearl of Hungerford Berks
- LAURENT—BAKER**—On June 3rd at Hampstead Town Hall, Louis Philippe Eugène Laurent M.D. Lond to Phyllis Margaret, only daughter of C H Collins Baker, C.V.O., of the Huntington Library, California
- ROBERTSON—WATT**—On June 3rd, at St Paul's street Congregational Church Aberdeen, Capt. Hamish Gordon Grant Robertson R.A.M.C., to Marjorie Mary Watt eldest daughter of the Lord Provost of Aberdeen
- WARNER—MICHELSON**—On June 4th Frederick Sydney Warner M.R.C.S., L.D.S. to Cecily Florence Michelson

DEATHS

- BARBER**—On June 4th at Haywards Heath Hailford Vaughan Barber M A Camb, L.R.C.P. Lond, aged 83
- BARKER**—On June 2nd at Woking, the residence of his sister in law Percy Duckworth Barker M.R.C.S. Eng aged 63
- BENNETT**—On June 3rd Claude John Fiddows Bennett M.R.C.S. Eng D.P.H. of Inglewood Melksham
- CHUBB**—On May 31st at Pitt street W, William Lindsay Chubb M.B.E. M.D. Durh formerly in practice at Sandgate Kent and Farnborough Hants
- EDGAR**—On June 1st at Trov-court Kensington, W, Peter Galston Edgar M.B. Edin aged 68
- HARVEY**—On June 4th at Letchworth, William Eyer Harvey M.B. Oxon aged 52
- ROBERTSON**—On June 4th at Wellington New Zealand Alexander Robertson M.D. Glasg
- V B**—A fee of 7s 6d is charged for the insertion of Notices of Births Marriages and Deaths

NOTES, COMMENTS, AND ABSTRACTS

PROTAMINE INSULIN

Writing last January Dr P. Wolff¹ of Geneva was already able to review 140 papers on the new insulin compounds with a slow action. The conclusions he draws from these and from his own experience may be summarised as follows:

(1) The treatment of severe diabetes is both safer and simpler with the new compounds than with ordinary insulin.

(2) Absorption being slower wide changes in blood sugar are prevented and hypoglycæmic reactions are less common and milder.

(3) A high fasting blood-sugar is the special indication for protamine insulin since it is of great advantage to the diabetic to begin the day with an approximately normal metabolism.

(4) Insulin-sensitive patients can be more satisfactorily controlled with protamine insulin because frequent reactions are avoided.

(5) Young diabetics respond more favourably to protamine than to ordinary insulin.

(6) The dosage as well as the number of injections can often be reduced by using protamine insulin and some patients are able to abandon insulin altogether after treatment with it.

(7) Diabetics coming under care for the first time should be given protamine insulin for in this way their treatment can be stabilised satisfactorily with a single dose daily.

(8) There are no important disadvantages in the new preparations as compared with the old but in acute cases they are unsuitable and in pre- and post-operative conditions, coma, acidosis and injections they should be only gradually substituted for the old.

(9) Protamine insulin offers a great advance towards giving the diabetic a completely physiological nutrition.

These conclusions sound more favourable to protamine insulin than those contributed to our last issue by Dr Izod Bennett and his colleagues at the Middlesex Hospital. But Dr Wolff is himself doubtful whether any form of retard insulin has yet been sufficiently studied to warrant general use outside the clinic: their administration must be adjusted to individual cases and not applied by any rule of thumb. The possibility that they may offer a better control of the disease as a whole is nevertheless a high one and a more continuously normal level of the blood sugar must be of advantage. E. P. Joslin who has already treated over 700 diabetics with the new preparations speaks of the new Insulogerm and hopes that especially the risk to vessels, nerves and eyes of diabetics may at last be overcome.

HOSPITAL LIBRARIES

MANCHESTER has an advantage over London in the organisation of a hospital library service as hospitals and libraries are both under the control of the same local authority. Mr O. Nowell, chief librarian of Manchester, gave to a meeting included in the annual conference of the Library Association at Scarborough last week an admirable account of what has been accomplished under his direction. Starting with the proposition that a hospital library service is more than the supply of books to patients he described its value to nurses and maids as well as to doctors, engineers, porters and administrative staff. In one hospital belonging to the corporation but many miles from Manchester with a staff of two hundred a collection of books is maintained for their use as well as for the patients and any book specially required by a doctor or other member of the staff can be obtained on request. In London the County Council have an arrangement with the British Red Cross Library which by the terms of

its trust is limited to patients. For the hospitals in Manchester whether council or voluntary there is a special committee working in the closest co-operation with the Corporation Libraries Committee. The organisation is under professional direction with voluntary helpers drawn from a wide range of organisations including the Dickens Fellowship who have been particularly excellent in one hospital. The libraries department is responsible that all books issued are good of their kind in good condition and cared for at least as much as the general library stock. The repair and binding of the books is also supervised by the public library staff. In order to have the assistance of the central committee it is essential for a hospital to have a recognised supervisor in charge belonging preferably to an already existing organisation created for some wider purpose which gives strength to the team and provides the very necessary reserves for substitutes. Members of the League of Women Helpers have been particularly acceptable on this account.

The qualifications of the library helper were described by Mr Nowell to be 'A book lover but no highbrow, a pleasing personality with not too much of the bedside manner, the capacity for not just taking on a job of work but for sticking to it; loyalty to the service and a love of it for its own sake. The principal difficulty has been to find suitable rooms for library purposes and Mr Nowell entered a plea that for all new hospitals a library department—centrally situated—will be planned. Special reference was made to mental hospitals and Mr Nowell expressed his conviction that this work to be successful must be in the hands of a trained librarian; though at the same time he did not regard the service as highly specialised but rather that the patients should be catered for exactly in the same way as the general reader in the public library.

It is clear that under professional direction the work of voluntary helpers can be rendered more efficient and the service more beneficial to the patients and staff whether in general or mental hospitals.

THE BIOCHEMISTRY OF MILK SECRETION

ON May 1st we referred to the intensive study of milk production now being made at the National Institute for Research in Dairying at Reading—a study which must stimulate analogous thought on human lactation. In a paper since read before the Royal Society of Arts, Prof. H. D. Kay, now director of the Institute, described the influence on lactation of various factors including hormones. The parts played by hormones in bringing about mammary development and lactation long suspected are now sufficiently understood for the processes to be induced in the male of some animals by means of oestrin, progesterin and prolactin; but the effects of hormones of oestrin and thyroxine in particular on established lactation in the cow are not what would be immediately guessed from clinical experience. If a sufficient dose of oestrin is administered to a lactating cow the animal is brought into season within a few hours and there is also a moderate fall in the milk volume. This accords with most farmers' experience that the quantity of milk often falls when a cow comes into season. But the fall caused by oestrin is succeeded by a rise to the previous level or even above and at the same time an increase of the order of 10 per cent. in the proportion of fat and non fatty solids in the milk. The increase if the dose of oestrin is large may persist for considerable periods having been observed in two cows for two months. Perhaps the minor digestive disturbances that commonly affect infants when their mothers menstruate during lactation may be attributable to an enrichment of the milk comparable to the enrichment seen in these cows.

Thyroxine and dried thyroid were dramatic in their effect on cows the milk yield increasing by 20-30 per

¹ Über klinische neue Arzneimittel. II. 5. Insulinpräparate mit verzögerter Wirkung. H. Wolff. Bericht d. Intern. Kongresses med. Jahrbuch. Basel. H. Schwabe and Co. 1933.

cent, the fat by 16 per cent, and the total yield of butter fat per day by 50 per cent. If a similar effect is obtained in women it will seem that the anxiety of some types of mother, which is traditionally a cause of failure to breast-feed, is not related to excessive thyroid secretion.

Speaking of the excretion of individual constituents of milk Prof Kay said that the amount of phosphatase in milk may be taken as an index of the efficiency of the gland, its concentration is least in the milk at the height of normal lactation and is also low in the abundant and rich secretion of milk after thyroid administration. In mastitis, on the other hand, the phosphatase concentration is high.

Comparison of the venous and arterial blood of the gland has shown that in all probability the lactose of milk is derived from blood glucose, the several phosphorus compounds from the inorganic phosphate of the plasma (and not from the much larger quantities of organic phosphorus compounds in the blood), and part of the casein and the albumin from circulating amino-acids.

NUTRITIONAL RETROBULBAR NEURITIS—Dr Fitzgerald Moore asks us to say that in his paper published in our issue of May 22nd a sentence on p 1226 under the heading of Aetiology should read "Thus it has not been possible yet for me to prove therapeutically that ophthalmological response is due to vitamin-B, treatment exclusively, but other general evidence is so strong that I believe this certainly to be only awaiting confirmation in this respect." In the article as printed the word italicized appeared as *vitamin-B*.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1, Wimpole-street W
TUESDAY June 15th—5.30 P.M., general meeting of fellows

THURSDAY

Dermatology 5 P.M. (Cases at 4 P.M.) Dr Elizabeth Hunt 1 Rodent Ulcer Dr H C Semon 2 Psoriasis 3 Case for Diagnosis 1 Sarcoid Stimulating Rhinophyma

FRIDAY

Obstetrics and Gynaecology 8 P.M. Annual general meeting Dame Louise McIlroy Results of Radium Treatment on Carcinoma of the Uterus and Uterine Haemorrhage Mr A C Palmer The Treatment of the Prolapse Syndrome and Reconstruction of the Pelvic Diaphragm and Vaginal Hysterectomy in One Operation (Cine-matograph film)

Laryngology and Otology 9.30 A.M. (Norfolk and Norwich Hospital Norwich) Mr E D D Davis, Dr S H Myrind (Copenhagen) Mr G H Howells, and Mr F C W Capps Orbital Cellulitis due to Sinus Infection and its Treatment Dr J H Ebbs (Birmingham) Early Bronchiectasis in Children and its relation to Ear, Nose, and Throat Diseases of Children Dr Brantford Morgan (Norwich) The Relation of the Ear, Nose and Throat to the Diseases of Children Mr F C Ormerod Tubercular Ulcerations of the Mouth and Pharynx 2.30 P.M. Demonstration and Discussion of Cases

SATURDAY

Laryngology and Otology 9.30 A.M. Dr S H Myrind Problems of Aural Medicine Dr Phyllis Kerridge Hearing and Speech in Deaf Children Mr Hamblen Thomas Physical Aspects of Tinnitus Dr M Soudille (Nantes) The Present State of the Surgical Treatment of Otosclerosis
Disease in Children 1.30 P.M. Visit to Royal Manchester Children's Hospital Pendlebury Tour of the new Zachary Merton Convalescent Home and Isolation Block 2.15 P.M. Demonstration of cases in the wards of the Hospital 4.15 P.M. demonstration of cases at the Duchess of York Hospital for Babies

EUGENICS SOCIETY

TUESDAY June 15th—5.15 P.M. (Linnean Society, Burlington House Piccadilly W.), Prof W G Miller Veterinary Eugenics

RESEARCH DEFENCE SOCIETY

TUESDAY June 15th—7 P.M. (London School of Hygiene Keppel Street W.C.) Prof G Gray Turner What Research Owe to the Paget Tradition (Stephen Paget memorial lecture)

ROYAL SOCIETY OF TROPICAL MEDICINE AND HYGIENE Manson House 20 Portland place, W
THURSDAY June 17th—8.15 P.M. annual general meeting 8.30 P.M. Mr Henry Foy (Salonika) Blackwater Fever in Macedonia Dr N Hamilton Fairler and Mr R J Bromfield Pseudo methemoglobin in Blackwater Fever and its Clinical Significance

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W

TUESDAY June 15th—1.30 P.M. Dr D Hunter Occupational Diseases

WEDNESDAY—Noon clinical and pathological conference (medical) 2 P.M. Dr J Gray Cerebral Haemorrhage and Softening 3 P.M. clinical and pathological conference (surgical) 4.30 P.M. Prof M Greenwood F.R.S. Experimental Epidemiology

THURSDAY—2.15 P.M. Dr Duncan White Radiological Demonstration 3 P.M. operative obstetrics 3.30 P.M. Mr A K Henry Demonstrations of the Cadaver on Surgical Exposures

FRIDAY—3 P.M. clinical and pathological conference (obstetrics and gynaecology)

Daily, 10 A.M. to 4 P.M., medical clinics surgical clinics and operations obstetrical and gynaecological clinics and operations

WEST LONDON HOSPITAL POST GRADUATE COLLEGE Hammersmith W 6

MONDAY June 14th—10 A.M. Dr Post X Ray Film Demonstration Skin clinic 11 A.M. surgical wards 2 P.M. operations surgical and gynaecological wards medical surgical, and gynaecological clinics 4.15 P.M. Mr Arnold Walker Antenatal Care

TUESDAY—10 A.M. medical wards 11 A.M. surgical wards 2 P.M. operations medical surgical and throat clinics 4.15 P.M. Dr Hugh Gordon Treatment of Common Skin Complaints

WEDNESDAY—10 A.M. children's ward and clinic 11 A.M. medical wards 2 P.M. gynaecological operations medical surgical and eye clinics 4.15 P.M. Mr Harvey Jackson Diseases of the Rectum

THURSDAY—10 A.M. neurological and gynaecological clinics Noon fracture clinic 2 P.M. operations medical surgical genito urinary and eye clinics

FRIDAY—10 A.M. medical wards skin clinic Noon lecture on treatment 2 P.M. operations medical surgical and throat clinics 4.15 P.M. Mr Vlasto Minor Problems on Oto laryngology

SATURDAY—10 A.M. children's and surgical clinics 11 A.M. medical wards

The lectures at 4.15 P.M. are open to all medical practitioners without fee

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole-street W

MONDAY June 14th to SUNDAY June 20th—CHELSEA HOSPITAL FOR WOMEN, Arthur street, S.W. All-day course in gynaecology—BROMPTON HOSPITAL, S.W. M.R.C.P. course in chest diseases 5 P.M. twice weekly—LONDON CHEST HOSPITAL, Victoria Park E, Wed. and Fri. 6 P.M. M.R.C.P. course in heart and lung diseases.—NATIONAL TEMPERANCE HOSPITAL Hampstead road N.W. Tues and Thurs 8 P.M. clinical and pathological course—PRINCE OF WALES'S GENERAL HOSPITAL Tottenham N Sat and Sun course in general surgery

Courses are open only to members of the fellowship

ST BARTHOLOMEW'S HOSPITAL, E.C.

THURSDAY June 17th—1.30 P.M. medical cases 3 P.M. surgical cases 4.30 P.M. X ray demonstrations

FRIDAY—10 A.M. Dr A F Gow Treatment of Chronic Diarrhoea 11 A.M. Mr G L Keynes Carcinoma of the Breast Noon Dr A C Roxburgh Demonstrations of cases of diseases of the skin 1.15 P.M. Dr H F Brewer Blood grouping and the Pathological Physiology of the Anaemias 2.45 P.M. Mr H J Burrows Treatment of Sacro Iliac Pain 4 P.M. Mr R Foster Moore Some of the Common External Diseases of the Eye

SATURDAY—10 A.M. Mr Sydney Scott Treatment of Common Disorders of the Middle Ear 11 A.M. Mr C K Vartan The Indications for and the Technique of Induction of Labour Noon Dr D F Deany Brown Treatment of Migraine Mr C Naunton Morgan The Treatment of Pruritus Ani and Haemorrhoids 2.45 P.M. Dr A W Franklin The Artificial Feeding of Infants 4 P.M. Mr B Rait-Smith Pre operative Medication and Induction of Anaesthesia
This course is open to all medical men

HOSPITAL FOR SICK CHILDREN Great Ormond street W.C.

THURSDAY June 17th—2 P.M. Mr James Crooks Deafness in Childhood 3 P.M. Dr D N Nabarro Interpretation of Faecal Bacteriology
Out patient clinics daily at 10 A.M. ward visits at 2 P.M.

ST MARY'S HOSPITAL W.

TUESDAY June 15th—3 P.M. (Institute of Pathology and Research) Prof J A Gunn Treatment of Arterio-sclerosis of the Heart

SOUTH WEST LONDON POST GRADUATE ASSOCIATION

WEDNESDAY June 16th—1 P.M. (St James Hospital, Ouseley road S.W.) Mr E A Lindsay Painful Feet

MANCHESTER ROYAL INFIRMARY

TUESDAY June 15th—11.30 P.M. Dr J F Wilkinson Achlorhydria

ADDRESSES AND ORIGINAL ARTICLES

CHANGE IN THE AGE OF MORTALITY FROM DIPHTHERIA

By R. M. F. PICKEN M.B. B.Sc. D.P.H.

MANUEL TALBOT PROFESSOR OF PREVENTIVE MEDICINE, WELSH NATIONAL SCHOOL OF MEDICINE

THIRTY years ago Murphy (1907) drew attention to variations in the age of mortality in London from certain diseases, including diphtheria. His charts will still repay study. For diphtheria he showed that in the years of high prevalence from 1861 to 1885 the mortality at ages 4-5-10 and 10-15 was low as compared with the average rates at these ages over the whole period 1850-1905 that the relative immunity at these ages gradually disappeared as the years progressed and that when high prevalence occurred in 1896-1900 it had been replaced by excessive susceptibility in relation to the average over the whole period. At younger ages the reverse had occurred. Briefly diphtheria appeared to be attacking and killing children of school age to an increasing extent. He saw evidence of a waning of this movement with falling prevalence in 1901-05 and said of the increasing part taken by older children up to the end of the nineteenth century "I think this may probably be a natural increase, although it may have been accentuated by increase in aggregation of children at school. However this may be, I should expect to find the first evidence of recurrence of epidemic prevalence of diphtheria in increase of relative incidence upon ages 4-5-10 and 10-15." He hoped that the figures for subsequent years would help to determine whether these changes were rhythmic.

Since Murphy wrote the question has received a good deal of attention. Chalmers (1913) described a similar fallure of the mortality at ages 6-10 to decline at the same speed as at younger ages in the death statistics of Scotland for groups of years from 1860-62 to 1908-11 and identified a progressive transference of notifications in Glasgow from ages under 5 to ages 6-10 during the years 1903 to 1912. Collis (1925) comparing the specific death rates in England and Wales for 1901-10 with those for 1861-70 demonstrated a decline at all ages over 10 but an increase in both sexes at ages 0-5 and 5-10 the latter being the greater. Woods (1928) expressed these specific death rates for England and Wales as percentages of the standardised death rates from diphtheria for decennia from 1861 to 1910 and for the four year period 1921-24 and showed conclusively that fatal diphtheria in 1921-24 as compared with 1861-70 and 1871-80 was concentrating on the age group 6-10 while remaining stationary or tending to decline at younger and older ages.

In a very full discussion of the mortality from diphtheria in England and Wales and in London Forbes (1932) brought the records up to 1929 and traced from period to period since 1871 the changes of mortality in five year age-groups up to 20-25 years. He tentatively confirmed Murphy's observation that diphtheria tended to become relatively more fatal in the later age groups during times of high prevalence especially in London. He suggested further that there was evidence that this process was extending even to young adult ages in recent years. The Registrar General (1934) in an illuminating table compares the rates of mortality at single ages up to

5 and at ages 10-15 with those at ages 5-10 for individual years 1901-34. He shows that throughout the whole of this century there has been a progressive shifting of mortality risks toward school age and mentions a similar change in Prussia. His table indicates that the risk at ages 10-15 in post-war years had been on the whole greater than pre-war even when expressed in terms of the rapidly rising risk at ages 5-10.

MORTALITY AFFECTED BOTH BY INCIDENCE AND BY FATALITY

With the exception of Chalmers these writers have each confined their attention to mortality, reasonably assuming that age-mortality was a measure of age-prevalence. Chalmers's table of notifications in Glasgow expressed the cases in each age-group as a percentage of the total at all ages in each year taking no account of changes of age of the population. The transference of notifications to school age appeared to be taking place too rapidly to be explained entirely by such changes. It has seemed to me that the respective factors of incidence and fatality might be worthy of further exploration. The most satisfactory way of doing so would possibly have been to investigate the age-fatality of hospital cases, but unfortunately it is impossible to get such statistics of sufficient magnitude in satisfactory age groups over a long series of years without putting others to labour which hardly seems justifiable. Woods (1933) discusses at some length the value of notification records and of hospital fatality rates, and concludes that they both have their defects. She points to the obvious fallacy arising from increased bacteriological diagnosis of diphtheria in recent years swelling the toll of mild cases. Indeed this, among other problems, has caused the London County Council to issue a special report on the nomenclature of diphtheria (1936) and to include the special designation bacteriological diphtheria in its tables of hospital discharges. Nevertheless the graph of notification rates in England and Wales for diphtheria and scarlet fever (which tend to run in harness) shows little divergence throughout the period since 1911 for which these figures are available, suggesting that bacteriological methods have not greatly increased the number of notifications in recent years throughout the whole country. It is not possible to determine whether other changes of fashion have raised the notification rates for both diseases. In London however with which this paper is largely concerned there does seem to have been an exceptionally high notification rate for diphtheria since 1921 a fact upon which the Registrar General has commented from time to time. A part therefore of the apparently great fall in fatality in recent years is probably artificial and the fact that it is demonstrable in hospital statistics does not detract from this conclusion since very few notified cases nowadays fail to be admitted. The picture is still further confused by the exceptionally large proportion of wrong or doubtful diagnoses of diphtheria. The important question for practical purposes is whether these fallacies may be differential as regards age-groups. As a test of the validity of placing certified deaths against notifications rates have been calculated and compared with hospital fatality rates so far as these are available as shown in Table A.

The age-distributions of the fatality of all cases and of hospital cases were somewhat different in the first ten years of the century. In this connexion it may

be noted that the proportion of hospital admissions to notifications was only 65 per cent in 1901-05 and 67 per cent in 1906-10, whereas in 1935 it was 99 per cent (if all the cases admitted and classed as "bacteriological diphtheria" were included among the notified, even if they were all excluded the

TABLE A—London Diphtheria Fatality at Certain Ages as Percentage of Rate at 5-10 Years (Rates based on all Notifications and Deaths compared with Hospital Rates)

Period	—	0-5	5-10	10-15
1901-05	{ All cases Hospital cases	224 188	100 100	36 42
1906-10	{ All cases Hospital cases	240 191	100 100	28 53
1932-35	All cases	125	100	49
1935	Hospital cases	131	100	39

percentage of admissions was 88). In the earlier years, then, it is likely that the fatality at ages over 5 was weighted in hospital by the admission of a preponderance of grave cases, and it is also possible that a large proportion of the rapidly fatal cases under 5 used to die at home. However this may be, the indices are reasonably similar in magnitude and trend, it seems that no very great fallacy will arise from studying specific fatality rates based on notifications and deaths.

SOURCES OF INFORMATION

In pursuing an investigation of this kind one has to take data where they can be found. Notifications for England and Wales are available only since 1911 and they are not classified by age and sex. The material has therefore been derived from London, Manchester, and Glasgow. At the outset it should be said that what has happened in these large towns is not necessarily true for other parts of the country. There is some evidence that it is not. Unfortunately most of the annual reports of medical officers of health group together the notifications and deaths from infectious diseases at all ages from 5 to 15, and the Registrar General classifies local deaths in the same way. For the diseases predominantly affecting childhood such classification is of little value, and it is therefore difficult to carry the inquiry into many areas.

AGE MORTALITY IN ENGLAND AND WALES

In order to test whether the movement of specific death rates in London is comparable with that in England and Wales rates have first been calculated for the whole country. These differ from the figures given in the papers quoted above, as they apply to groups of five years around censuses commencing in 1901. Earlier data have not been used because comparisons between the records of diphtheria of last century and the present are questionable. In the early days of registration scarlet fever was imperfectly differentiated from diphtheria and croup was only diphtheria to an undetermined extent, although it has been customary to combine the two causes. Moreover, notification, with its stimulus to diagnosis, became universal only in the last decade of the nineteenth century and almost immediately thereafter antitoxin treatment began to affect mortality. In spite of the increasing influence of bacteriological diagnosis the figures of the past 37 years have probably a more uniform meaning than formerly. In all the tables in this paper deaths

TABLE I*
England and Wales Diphtheria Deaths and Death-rates per Million † at Certain Ages in Certain Periods

Period	—	0-	5-	10-15	0-15
MALES					
1899-1903	{ Deaths D R	12 850 1,385 ± 27	5 608 645 ± 10	971 116 ± 8	733 ± 12
1909-13	{ Deaths D R	6,546 670 ± 19	3 684 399 ± 15	620 71 ± 6	397 ± 8
1919-23	{ Deaths D R	5 380 640 ± 19	2 004 442 ± 16	971 106 ± 8	388 ± 9
1929-33	{ Deaths D R	3,200 424 ± 17	2 823 334 ± 14	690 85 ± 7	218 ± 7

FEMALES					
1899-1903	{ Deaths D R	12,588 1 353 ± 27	6,815 780 ± 21	1 007 131 ± 9	776 ± 12
1909-13	{ Deaths D R	6 119 638 ± 18	4,694 508 ± 16	703 80 ± 7	417 ± 9
1919-23	{ Deaths D R	5 116 624 ± 19	4 577 522 ± 17	1 107 121 ± 8	414 ± 9
1929-33	{ Deaths D R	2 868 388 ± 16	3,101 388 ± 15	807 101 ± 8	291 ± 8

PERSONS					
1899-1903	D R	1 369 ± 19	713 ± 14	124 ± 6	757 ± 8
1909-13		657 ± 13	453 ± 11	70 ± 3	405 ± 6
1919-23		632 ± 14	482 ± 12	114 ± 6	401 ± 6
1929-33		406 ± 12	362 ± 10	93 ± 5	285 ± 5

* In this and the other main tables, rates in age and sex groups over 15 years have been omitted. They have been calculated, but the numbers of cases and deaths are too small to give rates of significance. The actual numbers of cases and deaths in the three age groups of childhood are included in some tables because they are not very easily found elsewhere.

† In Tables I, II, and III this is based on census populations of the central year in each period.

D R.—Mean annual death rate.

from croup—which are very small in number—are ignored.

Table I bears out the general observation that diphtheria has greatly declined in England and Wales as a cause of mortality at all ages under 15 years, and that there has been little difference in this respect as between the sexes. Males, however, as has been frequently noted, have succumbed to a greater extent at ages under 5 the reverse being markedly the case at ages 5-10 and 10-15, so that the

TABLE B—England and Wales Diphtheria Mortality at Certain Ages as Percentage of Rate at 5-10 Years

Period	0-5				5-10			10-15		
	P	M	F	—	P	M	F	P	M	F
1899-1903	192	215	173	100	17	18	17	17	18	17
1909-13	145	169	126	100	17	18	16	17	18	16
1919-23	131	145	110	100	24	24	23	24	24	23
1929-33	112	127	100	100	26	26	26	26	26	26

P = persons M = males F = females

death rate among females at the combined ages 15 consistently higher. The relations between the specific rates may be expressed as in Table B.

When the death rate at ages 5-10 is represented as 100 for males or females or both sexes the index for children below these ages is seen to have fallen from about 200 to a figure approximating to 100. For females the two rates have become identical.

TABLE II

London Diphtheria Deaths and Death rates per Million at Certain Ages in Certain Periods

Period.	—	0-5	5-10	10-15	0-15
MALES					
1899-1903	Deaths D.R.	2 275 1 835 ± 86	766 694 ± 55	123 120 ± 24	930 ± 36
1909-13	Deaths D.R.	863 738 ± 50	214 292 ± 37	20 25 ± 11	389 ± 24
1919-23	Deaths D.R.	1 342 1 108 ± 86	740 759 ± 61	172 167 ± 29	759 ± 36

FEMALES					
1899-1903	Deaths D.R.	2 248 1 817 ± 50	972 872 ± 63	120 113 ± 23	980 ± 33
1909-13	Deaths D.R.	818 700 ± 55	398 307 ± 40	51 49 ± 16	387 ± 24
1919-23	Deaths D.R.	1 267 1 362 ± 80	833 842 ± 65	198 104 ± 31	780 ± 36

PERSONS					
1899-1903	D.R.	1 820 ± 61	756 ± 41	117 ± 17	958 ± 26
1909-13	"	719 ± 33	327 ± 27	37 ± 9	379 ± 17
1919-23	"	1 288 ± 61	700 ± 44	181 ± 21	760 ± 25
1919-20, 21, 22, 23	Deaths D.R.	773 649 ± 47	540 412 ± 33	107 84 ± 16	375 ± 20

At ages 10-15 mortality is increasing in importance even as compared with the rate at 5-10 years and therefore much more in relation to the rate under 5 years. Death is sparing the very young far more than those of later ages.

SPECIFIC RATES OF MORTALITY INCIDENCE AND FATALITY IN LONDON

In Table II corresponding rates are given for London. The deaths for 1931 are not available in the required age-grouping and those for the sexes separately cannot easily be obtained for any of the last group of years. The relations of the specific rates may be summarised as before in Table C.

TABLE C—London Diphtheria Mortality at Certain Ages as Percentage of Rate at 5-10 Years

Period.	0-5			5-10		10-15	
	P	M	F	—	P	M	F
1899-1903	32	204	108	100	15	17	13
1909-13	20	251	190	100	11	9	23
1919-23	18	190	102	100	23	3	23
1919-20, 21, 22, 23	157	—	—	100	20	—	—

In London the movement has been the same as in England and Wales although children under 5 years have been, and continue to be relatively more affected than in the country generally. So far as the comparison extends the mortality under 5 years has again

exceeded that at ages 5-10 to a greater extent among males than females.

Whether this movement and these relations are attached to incidence or fatality remains to be examined. Using notifications as a measure of

TABLE III

London Diphtheria Notifications and Rates per Million at Certain Ages in Certain Periods

Period.	—	0-5	5-10	10-15	0-15
MALES					
1899-1903	Cases O.R.	10 791 8 709 ± 187	8 157 7 404 ± 183	2 739 2 605 ± 111	0 133 ± 97
1909-13	Cases O.R.	6 030 6 679 ± 155	5 523 5 117 ± 154	1 765 1 774 ± 04	2 014 ± 80
1919-23	Cases O.R.	10 375 10 990 ± 238	11 011 10 993 ± 233	4 740 4 604 ± 151	87 00 ± 121

FEMALES					
1899-1903	Cases O.R.	10 281 8 390 ± 182	9 907 8 907 ± 190	2 602 2 392 ± 126	6 977 ± 100
1909-13	Cases O.R.	6 015 6 160 ± 149	6 612 6 077 ± 166	2 350 2 323 ± 107	4 580 ± 84
1919-23	Cases O.R.	9 230 9 945 ± 230	12 475 12 503 ± 240	6 068 5 896 ± 109	9 390 ± 15

PERSONS					
1899-1903	C.R.	5 505 ± 130	8 160 ± 135	3 051 ± 84	6 707 ± 70
1909-13	"	5 423 ± 120	5 607 ± 113	2 082 ± 71	4 441 ± 57
1919-23	"	10 428 ± 103	11 747 ± 172	5 264 ± 113	9 007 ± 87
1919-20, 21, 22, 23	Cases O.R.	17 060 11 476 ± 193	19 190 11 720 ± 188	6 537 4 063 ± 111	9 030 ± 97

C.R. = Mean annual case-rate.

incidence I have prepared Table III for the periods covered by Table II. It shows the specific case rates. Their relations are exhibited, as before in Table D.

Selective incidence among males under 5 years seems to follow their selective mortality and indeed, as will be shown later may be the main explanation of it. The notification rates for the combined sexes at ages under 5 and at 5-10 have not been very different from one another in each period. Such decline as has occurred in the relative importance of the younger ages is moderate and uncertain and has not been carried on to the most recent period.

TABLE D—London Diphtheria Incidence at Certain Ages as Percentage of Rate at 5-10 Years

Period.	0-5			5-10		10-15	
	P	M	F	—	P	M	F
1899-1903	104	118	93	100	37	36	23
1909-13	8	111	85	100	37	35	34
1919-23	89	99	79	100	45	42	47
1919-20, 21, 22, 23	95	—	—	100	35	—	—

When the case rates in the age-group 0-5 are compared with the corresponding rates at ages 5-10 practically all the differences lie within errors of random sampling. The tendency of the mortality at later ages to assume increasing importance may have

been partly due to a shift of incidence, but this explanation does not apply to the most recent years when this shift has been less pronounced than in the two preceding periods. It may be noted that the first and third of the four periods included

TABLE IV

London Diphtheria, Percentage of Deaths to Notifications at Certain Ages in Certain Periods

Period	0-	5-	10-15	0-15
MALES				
1899-1903	21.08 ± 0.38	9.39 ± 0.31	4.39 ± 0.39	14.55 ± 0.24
1909-13	12.94 ± 0.40	5.68 ± 0.31	1.47 ± 0.29	8.62 ± 0.24
1919-23	12.93 ± 0.38	6.72 ± 0.24	3.62 ± 0.27	8.62 ± 0.17
FEMALES				
1899-1903	21.80 ± 0.41	9.81 ± 0.30	3.33 ± 0.30	14.04 ± 0.22
1909-13	13.60 ± 0.44	6.02 ± 0.29	2.16 ± 0.30	8.45 ± 0.23
1919-23	13.72 ± 0.36	6.72 ± 0.22	3.26 ± 0.23	8.29 ± 0.16
PERSONS				
1899-1903	21.46 ± 0.28	9.62 ± 0.22	3.80 ± 0.24	14.28 ± 0.16
1909-13	13.25 ± 0.30	5.87 ± 0.21	1.87 ± 0.21	8.53 ± 0.16
1919-23	13.30 ± 0.24	6.72 ± 0.16	3.42 ± 0.17	8.45 ± 0.12
1929 30 32 & 33	5.50 ± 0.19	3.30 ± 0.14	1.94 ± 0.19	3.95 ± 0.10

years of exceptionally high prevalence, but they are least in accord as regards the relative incidence at early and later ages.

In Table IV the proportions of deaths to notifications in age and sex groups in London are shown for the same periods of years as before. Diphtheria has tended to be less fatal among all female children than males, but if there is any real difference it is due to the relative exemption of females from attack at ages under 5, for the fatality at this age and at ages 5-10 is, if anything, greater. Over the periods under review the proportion of deaths to notifications has fallen greatly. So probably has the real fatality, although it would be difficult to determine the influence of increased bacteriological diagnosis on these rates. If diagnosis were assumed to have been more thorough

TABLE E—London Diphtheria Fatality at Certain Ages as Percentage of Rate at 5-10 Years

Period	0-5			5-10	10-15		
	P	M	F		P	M	F
1899-1903	223	224	223	100	39	47	34
1909-13	226	228	226	100	32	26	36
1919-23	198	192	204	100	51	54	48
1929 30 32, & 33	167	—	—	100	50	—	—

in 1919-23 than in 1909-13 then diphtheria must have been definitely more virulent in the later period, for the fatality, even as here measured, was slightly greater in each of the three five year age groups under 15 years. The relations between the rates at different ages throughout this series of years may be expressed, as before, in Table E.

The post-war shift of mortality to later ages is seen to have been accompanied by a very similar change in the fatality relations. In this case the figures, so far as they go, indicate that the change of fatality from the disease has not been different as

TABLE V

London Diphtheria Percentage of Deaths to Notifications at Certain Ages in Certain Pre war and Post war Periods

Period	—	0-	5-	10-15	0-15
MALES					
1901-05	C	8 899	6,275	2 155	
	D	1 509	502	63	
	F	10 90 ± 0.40	8 00 ± 0.33	2 92 ± 0.36	11.07 ± 0.35
1906 10	C	7 498	5 604	1,742	
	D	1 103	358	31	
	F	15 50 ± 0.42	6 38 ± 0.33	1 78 ± 0.32	10.45 ± 0.35
1921 25	C	11 764	10,207	4,614	
	D	1 221	550	144	
	F	10 38 ± 0.28	5 39 ± 0.22	3 12 ± 0.26	7.20 ± 0.16
1926 29	C	8 890	9,229	2,934	
	D	506	248	44	
	F	5 69 ± 0.25	2 69 ± 0.17	1 50 ± 0.22	3.79 ± 0.13
FEMALES					
1901-05	C	8,250	7,767	2,763	
	D	1 497	598	75	
	F	18 14 ± 0.42	7 70 ± 0.30	2 71 ± 0.31	11.55 ± 0.23
1906 10	C	7 022	6,039	2 358	
	D	1 055	440	42	
	F	15 02 ± 0.43	6 34 ± 0.29	1 78 ± 0.27	9.40 ± 0.33
1921 25	C	10 178	11,249	5 838	
	D	1 099	654	170	
	F	10 89 ± 0.31	5 81 ± 0.22	2 91 ± 0.22	7.05 ± 0.15
1926 29	C	7 662	9,846	2 621	
	D	460	309	40	
	F	6 00 ± 0.27	3 14 ± 0.18	1 75 ± 0.26	4.05 ± 0.14
PERSONS					
1901-05	F	17 53 ± 0.29	7 83 ± 0.23	2.81 ± 0.24	11.75 ± 0.17
1906 10	F	15 27 ± 0.30	6 36 ± 0.22	1.78 ± 0.21	9.91 ± 0.17
1921 25	F	10 57 ± 0.21	5 61 ± 0.16	3.00 ± 0.17	7.13 ± 0.11
1926 30	C	21 114	24,127	8,038	
	D	1 223	702	121	
	F	5 79 ± 0.16	2 91 ± 0.11	1 46 ± 0.13	3.82 ± 0.08
1932 35	C	12 705	14 707	5 271	
	D	690	637	111	
	F	5 43 ± 0.20	4 33 ± 0.17	2 11 ± 0.20	4.40 ± 0.11

C = cases D = deaths F = fatality

between males and females. When read in conjunction with the movement of incidence rates, the above table indicates that in the last period the movement of mortality to later ages is entirely due to the increasing importance of the fatality at these ages.

The comparison is carried further in Table V which covers two almost continuous series of years from 1901-10 and from 1921-35. The most impressive features of the table are the fall of fatality at ages under 5 years, and the recent arrest of the decline at later ages. This is especially striking in the last four years when a rise at ages 5-10 and 10-15 has been sufficient to increase the rate at all ages under 15, although that at ages under 5 years has continued to fall slightly. These points are epitomised in Table F.

As there is no pronounced or uniform difference in the sexes, it is perhaps of little importance that

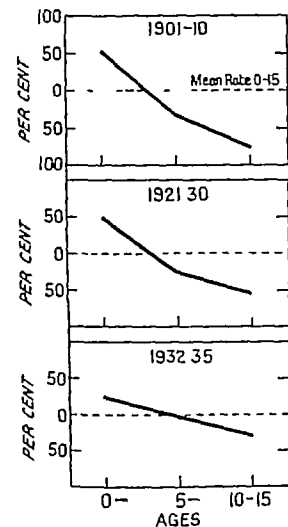
the rates for males and females separately are not available for 1932-36. Although fatality at ages 5-10 has been relatively more important during the whole post-war period the movement has fluctuated. The figures on which the rates are based are

TABLE F—London Diphtheria Fatality at Certain Ages as Percentage of Rate at 5-10 Years

Period	0-5			5-10	10-15		
	P	M	F		P	M	F
1901-05	224	212	230	100	36	30	35
1906-10	240	213	237	100	28	8	28
1921-25	188	193	186	100	53	58	50
1926-30	199	211	191	100	50	56	56
1932-35	15	—	—	100	40	—	—

For the sexes separately the period is 1926-29

ably large and the irregularities are probably real. It can readily be understood that variations in the social classes affected by the disease from time to time might heavily influence the fatality at older



London Diphtheria fatality at certain ages as percentage of rate at ages 5-10

of the medical officer of health of Manchester has included tables of the cases and deaths of each of the important infectious diseases in short age-groups (sexes undistinguished) since 1891. In his report for 1933 Dr Veitch Clark commented upon the change of age incidence of diphtheria in the last twenty years. Table VI presents an analysis of the figures of cases and deaths since the beginning of the present century excluding the decade in which the war occurred. The proportion of deaths to notifications at all ages under 15 years has usually been more than twice as high as in London.

It is difficult to believe that this great excess can have been entirely due to less observance of notification in a large town which has a vigorous health department, and is also a teaching centre in medicine

TABLE VI

Manchester Diphtheria Percentage of Deaths to Notifications at Certain Ages in Certain Periods

Period	0-5	5-10	10-15	0-15
1901-05	1040 35% 20.73 ± 1.49	875 103 106 ± 1.06	4 18 7.09 ± 1.61	109 503 7.34 ± 0.96
1906-10	1316 100 30.30 ± 1.27	874 170 13.73 ± 1.10	225 11 4.20 ± 1.13	415 531 21.99 ± 0.54
1921-25	1183 200 16.83 ± 1.09	100 110 7.24 ± 0.65	663 32 4.83 ± 0.43	3460 318 10.09 ± 0.50
1926-30	1503 218 14.50 ± 0.91	175 160 6.90 ± 0.54	717 16 5.1 ± 0.53	4393 386 5.78 ± 0.43
1931-35	937 139 13.79 ± 1.11	1717 174 10.13 ± 0.73	764 41 3.37 ± 0.61	3438 317 10.09 ± 0.60

Part of it may be due to deliberate exclusion of unverified cases. This however is not the main point at issue. The relative importance of the fatality at ages may be tested, as before in Table G.

The movement is not quite the same as in London. The smaller numbers for Manchester make the comparison less valid. By chance the relationships in any one of the quinquennia might have been very different but it is probably more than a mere

TABLE G—Manchester Diphtheria Fatality at Certain Ages as Percentage of Rate at 5-10 Years

Period	0-5	5-10	10-15
1901-05	166	100	3*
1906-10	221	100	36
1921-25	233	100	67
1926-30	210	100	36
1931-35	136	100	3

coincidence that here also the fatality at ages 5-10 has become more important in the last ten and especially the last five years. Indeed, when the specific rates of deaths to notifications over the whole series of years from 1891 to 1930 are calculated * and compared with the rates in 1931-35 they show a significantly different relationship between the rates for the two lower age groups from that which holds at the present time.

FATALITY RATES IN GLASGOW

From records given by Chalmers (1913) and others contained in the annual reports of the medical officer of health of Glasgow specific proportions of deaths to notifications can be calculated for certain years and these are set out in Table VII. Expressed as before the fatality rates are related as in Table II.

The proportions of deaths to notifications at all ages under 15 years have been comparable with those in London but much lower than in Manchester although the social circumstances and medical standards of the two industrial cities are not dissimilar.

Ages 0-5: 2715 cases, 2463 deaths, fatality 90.7 per cent
Ages 5-10: 870 cases, 1014 deaths, fatality 117 per cent
Ages 10-15: 294 cases, 137 deaths, fatality 46.6 per cent
ND 2

TABLE VII

Glasgow Diphtheria, Percentage of Deaths to Notifications at Certain Ages in Certain Periods

Period		0-	5-	10-15	0-15
1903-07	C	2,141	1 240	388	3,767
	D	443	95	14	552
	F	20 60 $\pm$ 0 87	7 66 $\pm$ 0 75	3 63 $\pm$ 0 95	14 65 $\pm$ 0 58
1908-12	C	3,772	2 765	886	7 423
	D	689	179	29	897
	F	18 27 $\pm$ 0 63	6 47 $\pm$ 0 47	3 27 $\pm$ 0 60	12 08 $\pm$ 0 38
1924-28	C	3 997	3,803	1 438	9,298
	D	465	134	11	610
	F	11 63 $\pm$ 0 51	3 47 $\pm$ 0 29	0 76 $\pm$ 0 23	6 56 $\pm$ 0 26
1929-33	C	3 430	4 507	1,066	9,003
	D	358	175	41	574
	F	10 44 $\pm$ 0 51	3 88 $\pm$ 0 29	2 46 $\pm$ 0 38	5 08 $\pm$ 0 24
1934-35	C	1 377	1,979	876	4 232
	D	147	93	18	258
	F	10 67 $\pm$ 0 83	4 70 $\pm$ 0 48	2 05 $\pm$ 0 48	6 10 $\pm$ 0 37

Since 1924 the fatality at these combined ages seems to have fallen little, if at all, and at ages 5-10 the tendency has been upward although the numbers are too small to establish the movement definitely. Here, again, it may be said that the relative importance

TABLE H—Glasgow Diphtheria Fatality at Certain Ages as Percentage of Rate at 5-10 Years

Period	0-5	5-10	10-15
1903-07	270	100	47
1908-12	282	100	50
1924-28	335	100	22
1929-33	269	100	63
1934-35	227	100	44

of the fatality at ages has varied from time to time, but that there is the same recent tendency for the ages 5-10 to count more heavily, especially in the last two years

DISCUSSION

The fall in the death rate from diphtheria throughout the present century has been great and fairly continuous in England and Wales. As would be expected local fluctuations are more pronounced, but the trend is downward. Like scarlet fever the disease is generally thought to be no less common than formerly, and notifications, for what they are worth, and especially in their contemporaneous fluctuation with those of scarlet fever, support this view. If it is correct, diphtheria is following scarlet fever in becoming a less fatal disease, and this amelioration may not be entirely due to better, earlier, and more frequent treatment in hospital. If it is, as in the case of scarlet fever, a process not dependent upon ad hoc measures, other changes in the behaviour of the two diseases might be expected to agree. Woods (1928) has shown that diphtheria mortality has reacted less at ages 5-10 than at other ages, although the general tendency of death to be transferred to still later ages observed in scarlet fever was not demonstrable for diphtheria over the period with which she dealt. The Registrar-General (1934) does, however indicate that this movement is extending into ages 10-15. The specific death-rates shown in this paper for England and Wales and for London confirm this tendency. There is, therefore, some ground for believing that a process common to the two diseases is at work.

The assumption that these changes in the specific rates of mortality are due to changes of incidence seems to be only partly justified. Incidence rates, and the proportions of deaths to notifications at ages in London indicate that the state of affairs is more complex. On the whole there may have been a relative reduction in the case rate at ages under 5 years, as compared with later ages, until recently but it is not specially notable in the quinquennial period around the census of 1931. On the other hand, since the beginning of the century the decline of the fatality under 5 years of age in London has been much more rapid than at later ages. This also has not been a perfectly continuous movement, but it is revealed to a most striking extent in the rates for 1932-35 in comparison with earlier years and especially with the first decade of the century. In Manchester the fatality under 5 years has figured much less prominently in 1931-35 than in any other post war period or in the quinquennium 1906-10, but an exceptionally high fatality at ages 5-10 in 1901-05 served to reduce the relative importance of the younger ages. The movement is somewhat similar in Glasgow over the period for which data are available, but it may have set in later and it certainly has not gone so far as in London or Manchester. In all three cities the most prominent factor in the recent increase, or arrest in the decline, of fatality at all ages under 15 years has been a rise in the fatality at ages 5-10, although the small changes in Glasgow are equivocal.

It seems unlikely that this shift of the fatality is artificial. The educational period of life is that at which detection is likely to be most complete and notifications, indeed, to be inflated, so that the apparent fatality at ages 5-15 should have fallen most since the inception of the school medical service. Again, it is probable that immunisation in London and Manchester (it has not been extensively practised in Glasgow) has reached a higher proportion of school than of pre-school children. A table contained in the annual report of the medical officer of health of Manchester for 1935 indicates that this is especially true of the age group 5-10 in that city. As protection is a matter of degree it might have been expected to lead to an increase in the proportion of less fatal cases of diphtheria at these ages, and so to reduce the average fatality rate at the period of life when the reverse appears to have happened. Incidentally, the suspicion expressed by Dudley and others (1934) that immunisation, by creating carriers, would increase the risk for pre-school children is not so far confirmed by the incidence or mortality in London or Manchester.

The theory tentatively mentioned by Murphy and quoted by other writers, that the relative hesitancy of the mortality at ages 5-10 to fall at the end of the nineteenth and the beginning of the present century was due to aggregation of children in school, will hardly bear examination. It has been continuous over a long period without any increase in the aggregation, and it has apparently not been mainly a change of incidence. The excess incidence on females as compared with males at ages 5-15 hardly seems to lend itself to the explanation that they are brought more into contact with younger infective children.

It is interesting, but perhaps not very profitable, to speculate on the natural processes that might account for the movement. Such differences are not peculiar to diphtheria. They can be seen in the comparison between epidemics of any infectious

disease affecting urban and rural communities notably those which like poliomyelitis are sporadic over long periods but occasionally take on epidemicity (Friedemann 1928 and Aycock 1928). The age-variation of Schick immunity by class and locality is now a matter of common observation and is associated with differences of age mortality. The relative infrequency of patent or latent infections in a community might allow its herd immunity to decline (Dudley 1936) so leading to a change in the relative susceptibility of the population at later ages to contract the disease and die of it. Considerable periods of low prevalence of diphtheria do occur in localities and it would be interesting to compare the age-incidence and age-fatality of the disease during the months of rise and the period of decline in the aggregate of a series of epidemics, if numbers of sufficient magnitude could be observed. So far as the data in this paper go they do not indicate that exacerbations of incidence are the governing factor although the point may have been obscured by the periods chosen for analysis.

The most striking instance of unusual age mortality of a disease in modern times was afforded by the influenza epidemic of 1918-19. It seems to have been due less to departure from the usual age incidence of the disease than to a change in the ages affected by its chief mortal complication (pneumonia) accompanied by a change in the age-fatality of that complication (Collins 1931 1934). No explanation but an alteration in the nature of the virus or its symbiotics seems to meet this case. In connexion with diphtheria the most notable observation in modern times has been the differentiation of the corynebacterium into types. In a summary of the position Cooper and others (1936) comment on the fact that a change of predominance from intermediate to gravis strains occurred in Manchester between 1933 and 1934, but less detailed information is available as to the position in London and Glasgow. In neither of these towns does there seem to have been an excess of gravis strains at any time when examinations were made during the years 1933 to 1935 but the proportion of mitis strains was low in London. The association of mitis strains with laryngeal diphtheria is now generally recognised (Cooper and others 1936). A reduction in the prevalence of these strains might therefore be attended by a fall in the fatality among very young children who succumb most readily to laryngeal involvement while a rise of the more toxic gravis or intermediate strains might increase the risk for those a little older. I understand that such a reduction of laryngeal diphtheria in recent times has been noted in London.

PRACTICAL CONSIDERATIONS

The present policy of health departments is to concentrate on the immunisation of children in the second year of life. This is no doubt sound in theory as a means of gradually building up an immune population. The argument often used however in support of the practice—viz. that diphtheria is especially fatal under 5 years—is less valid at the present time than it used to be. It is easier to persuade parents to accept immunisation for school children and much easier to organise its administration at these ages. In view of the increased part taken by the age group 5-10 and to some extent 10-15 in mortality there is much to be said at the present time for adhering to the earlier policy of making sure that the younger school population is thoroughly dealt with while using every possible

means of persuasion to induce parents to accept immunisation also for infants at the end of the first year of life.

SUMMARY

1 The well known shift of diphtheria mortality from pre-school to school ages in England and Wales and in London is shown to have been continued up to recent times.

2 In London it is apparently not due entirely or even mainly to a change of incidence.

3 There has been a shift of fatality to later ages in London which is most striking in the period 1932-35. It is probably not artificial.

4 A similar change in fatality can be traced in Manchester and Glasgow but should not be assumed to have occurred in other areas.

5 The explanation may possibly be found in changes of strain of *Corynebacterium diphtheriae*.

6 It is suggested that immunisation of the younger school-children should not be neglected in favour of infants at the end of the first year of life.

I am indebted for some of the records used in this paper to Dr W. Gunn, medical superintendent to the North Western Hospital, London, to Dr R. Veitch Clark, medical officer of health, Manchester, and to Dr A. B. Macgregor, medical officer of health, Glasgow, and for making extracts from many reports for me and advice on certain statistical points to Mr W. T. Russell of the London School of Hygiene and Tropical Medicine. None of them is responsible for the way in which the figures have been used.

REFERENCES

- Aycock, W. L. (1928) *Amer. J. Hyg.* 8 35.
Chalmers, A. K. (1913) *Ann. Rep. of M.O.H., Glasgow* p. 231.
Collins, S. D. (1931) *Amer. Publ. Hlth. Rep.* 46 1909.
— (1934) *Ibid.*, 49 1.
Collins, L. L. (1935) *J. Stat. Med.* 23 201.
Cooper, K. E., Hapgood, F. C., McLeod, J. W., and Woodcock, H. E. de C. (1936) *Proc. R. Soc. Med.* 29 1029.
Dudley, S. F. (1936) *Ibid.*, 30 51.
—, May, H. M., and O'Flynn, J. A. (1934) *Spec. Rep. Ser. med. Res. Coun. Lond.* No. 195 p. 104.
Forbes, J. G. (1932) *Diphtheria Past and Present* London, p. 354.
Friedemann, U. (1928) *Lancet* 2 211.
London County Council (1936) *Nomenclature of Diphtheria Infections*.
Murphy, B. (1907) *Trans. epidem. Soc. Lond.* 26 99.
Registrar-General (1934) *Statist. Rev. of Eng. and Wales* New Ann. Series (Text) vol. 14 p. 57.
Woods, H. M. (1928) *J. Hyg.* 28 147.
— (1935) *Spec. Rep. Ser. med. Res. Coun. Lond.* No. 180 p. 46.

MASSIVE SPONTANEOUS INTRAPERITONEAL HÆMORRHAGE (SPONTANEOUS HÆMOPERITONEUM)

By JOHN BRUCE, M.B. F.R.C.S. F.D.M.

LECTURER IN CLINICAL SURGERY AT THE ROYAL INFIRMARY
EDINBURGH

(From the Department of Clinical Surgery, University
of Edinburgh)

MASSIVE intraperitoneal hæmorrhage is occasionally encountered as a sequel to traumatic malignant disease and in the female ectopic gestation. Apart from such circumstances, spontaneous bleeding of serious degree is one of the rarest of vascular accidents and certainly one of the rarest of acute abdominal catastrophes. In individual experience it is so infrequent that when it is discovered at operation for acute abdominal symptoms the surgeon is apt to be embarrassed and inadequate both in his investigation and in his treatment.

The cases presented here have certain features of interest which make them worthy of report, and I have thought it well to review what has been written on the subject, in an endeavour to determine what exploratory procedures are likely to be useful on such occasions.

SPONTANEOUS INTRAPERITONEAL HÆMORRHAGE IN THE FEMALE

CASE 1—The patient, a well-developed girl of 19, was admitted to hospital with a history that on the previous day she was seized with spasmodic pain in the lower abdomen. The pain was worse on the right side, and she thought that at the beginning it radiated to the back. On the day of admission she vomited on two occasions. There were no urinary or bowel symptoms of note, and the menstrual history was normal. She was, however, due to menstruate on the day of admission.

On first examination the clinical findings were largely negative save for some deep tenderness in the right iliac fossa. A tentative diagnosis of mild catarrhal appendicitis was made, and it was decided to admit her for observation. In the course of the forenoon, however, her temperature, previously normal, rose a little, the pain in the lower abdomen increased, and some lower abdominal rigidity appeared. The diagnosis was apparently confirmed and operation was advised. By the time it was carried out her condition had become further aggravated. The pulse was rapid, thready and her complexion was greivish, her facies anxious, and she was very restless.

The abdomen was opened by McBurney's method, and at once there was an escape of bright red fluid blood containing some clots. The appendix and cæcum were normal, and accordingly a paramedian incision was now made and the pelvis inspected. It contained a large quantity of blood, and after this was evacuated the source of the hæmorrhage was found to be a ruptured cyst in the left ovary, which even then was bleeding very profusely. The remainder of the ovary, the tubes, and the uterus were all congested, probably because she was due to menstruate. A left oophorectomy was carried out and the wound closed without drainage. The recovery was completely uneventful.

I had on several occasions operated on cases of ruptured ovarian cysts in which there was a small amount of blood in the pelvis. Indeed, along with ruptured ectopic pregnancy, this condition constitutes the bulk of intraperitoneal bleedings in the female sex. Seldom, however, does the hæmorrhage attain the massive proportions which it did in this instance, and it is rarely sufficient to be a source of danger. Phaneuf (1924) has recorded 42 examples of the condition and finds there is fairly equal liability to the accident in the follicular and the luteal varieties of cyst. A rarer and less well recognised cause of hæmorrhage in the female is rupture of the dilated or varicose veins which are occasionally found on the surface of a subperitoneal fibromyoma of the uterus. Ernst and Gammeltoft (1921) reported 23 cases of this kind, and pointed out that the accident is apt to be fatal if the rupture takes place into the broad ligament.

Spontaneous hæmoperitoneum from rupture of an ectopic gestation has a more serious prognosis than the other varieties, for the blood remains sterile only for a few hours. Thus, of 17 cases recorded by Dudgeon and Sargent (1905) in only 7 was there no infection after two hours. The usual infecting organism was the *Staphylococcus albus*, and it is to infection that the febrile course of the condition is apparently due.

It is abundantly obvious that in the female the source of intraperitoneal hæmorrhage is usually to be looked for in relation to the pelvic viscera. Nevertheless there are instances in which the bleeding

originates in conditions common to both sexes, and these will now be considered.

SPONTANEOUS HÆMORRHAGE COMMON TO BOTH SEXES

A variety of conditions that are common to the two sexes may manifest their presence by severe intra abdominal hæmorrhage, and their nature is often obvious at operation. This is true of spontaneous ruptures of the spleen (Bailey 1929-30), and liver (Bruce 1929), rupture of the splenic vessels in cirrhosis of the liver (Pyrah and others 1929, Ogilvie 1922), oozing from the liver in toxic hepatitis (Peck 1905), and in undulant fever (Box and Bamforth 1925), and ruptured mycotic aneurysm in acute bacterial endocarditis (Wilhus 1935).

Besides these, two types of spontaneous hæmorrhage are of especial interest. In the first, the bleeding occurs from an arterio sclerotic vessel, and the condition is generally and appropriately known as abdominal apoplexy. In the second, the source of the hæmorrhage and the underlying cause have not been discoverable at operation. It is on this latter type, especially, that the following cases are thought to have a bearing.

CASE 2—The patient was an unemployed man 34 years old of muscular build. For two days he had suffered from indefinite abdominal pain, and, six hours before admission, while standing at the doorway of the "close" in which he lived, he was seized with violent epigastric pain and with pain in the left shoulder. Both persisted in acute form. Nausea was experienced shortly after the pain began and he vomited within the hour. There were no other significant features in the history, but he did admit to suffering from chronic indigestion for an unspecified number of years.

When I examined him he was very restless and looked ill. He presented a curious plethoric or cyanotic appearance, and was very thirsty. The temperature was sub normal, the pulse rate, to begin with, only 76. The tongue was dry and slightly furred. The abdomen appeared to be distended, and the respiratory excursion was limited. Palpation disclosed fairly generalised tenderness, and muscular rigidity was present in the epigastric area. The liver dullness was of normal extent, elsewhere percussion gave a rather dull note over the major part of the abdomen, and especially in the flanks. The other systems were not abnormal in any obvious way.

The diagnosis was somewhat in doubt, but was thought to lie between an acute pancreatitis—which was favoured by his rather cyanotic colour—and a leaking gastric ulcer, the abdominal rigidity, the shoulder pain, and the former history of digestive trouble seeming to support the latter. Operation was advised and carried out within an hour of admission, by which time the pulse rate had risen considerably. The abdomen was opened by a right paramedian incision, and immediately the peritoneum was incised there was a gush of bright red fluid blood. A very large quantity of blood was thereafter evacuated, along with some large clots, and it was some time before the viscera could be adequately inspected. The stomach, duodenum, and pancreas were all normal. There was no rupture of the liver or spleen and no definite bleeding point could be identified. The condition of the omentum and the mesocolon was noted at the time. Each contained several small discrete hæmatomata and appeared somewhat congested. The pelvis was investigated after the incision had been enlarged, again with negative results. Accordingly, a small rubber dam was left in situ and the wound closed.

In the days succeeding operation an attempt was made to identify the presence of any blood dyscrasia, but the Wassermann test was negative, the blood counts within the limits of normality, and the differential blood count normal. The coagulation time and the platelet count also gave the usual readings. His progress was interesting. For the first six days vomiting was frequent he could retain nothing by mouth. After that he improved markedly, the vomiting stopped and he had a very

good appetite. In two weeks there was an intermittent pyrexia, due probably to the absorption of the intra-peritoneal blood; thereafter the temperature settled and his further recovery was uneventful. Seen at intervals since he has remained well and has had no further abdominal trouble of any kind.

I have been able to trace only one exactly comparable case, previously reported in this journal by Hartley and MacKeechie (1934).

His patient was a labourer aged 31 who experienced on rising in the morning a sharp pain in the left upper abdomen which was relieved by vomiting. Some hours later the pain recurred and he was admitted to hospital where his condition became so rapidly worse that laparotomy was decided upon. The operation findings are of great interest: there was a considerable quantity of blood in the peritoneal cavity and the omentum showed a series of discrete hæmatomata in its substance. The patient did not survive many hours and autopsy confirmed the operative findings in that no definite source of the hæmorrhage could be found.

Hartley and MacKeechie suggested somewhat provocatively that the condition be called *splanchnostaxis*.

A case of Churchman's (1911) though not exactly comparable, has certain points of similarity.

His patient was a man of 48 who for some years had suffered from constipation with dull abdominal pain and who finally came under his care with acute abdominal symptoms suggesting acute appendicitis. Shifting dullness was present in the flanks, and it was accordingly assumed that peritonitis had supervened. Operation revealed only intraperitoneal hæmorrhage and the patient died in three hours. At autopsy there was a hæmatoma in the rectal wall, and some ecchymosis in the neighbourhood of the pylorus and at other points in the small intestine. The bowel wall on section showed dilatation of the subserous vessels and intramural hæmorrhage.

Churchman regarded these findings as in keeping with hæmophilus largely because intraperitoneal and intraperitoneal hæmorrhages are known to occur in fatal cases of this disease and in experimentally produced hæmorrhagic disease (Whipple and Sperry 1909). This suggestion has not altogether been accepted and indeed Osler and McCrae (1926) regard Churchman's case as an acute form of hæmorrhagic peritonitis of which disease they also recognise a chronic variety analogous to the hæmorrhagic pachymeningitis described by Virchow. The chronic form is localised most commonly to the pelvis and its pathological manifestations take the form of the deposit on the surface of the peritoneum of successive layers of young connective tissue containing numerous large wide vessels from which repeated hæmorrhages take place.

In my own case and in the case of Hartley and MacKeechie the possibility of a hæmophilus or a hæmorrhagic peritonitis cause was quite definitely excluded and in view of the complete recovery on the one hand and the absence of demonstrable visceral or peritoneal post-mortem pathology on the other it is necessary to fall back on a vascular disturbance to explain the bleeding.

Spontaneous hæmorrhage from an arterio-sclerotic vessel is always a possibility in the abdomen as elsewhere. Nevertheless considering the great frequency of arterio-sclerotic vascular degeneration and the fairly common occurrence of gross visceral aneurysm the spontaneous rupture of visceral and peripheral arteries is remarkably rare. The accident indeed has been reported only on six occasions—

Hillard (1918)—Male aged 48. Sudden onset of abdominal pain with rigidity. Laparotomy showed

hæmorrhage but definite bleeding point not found. General arterio-sclerosis.

Starck (1923)—Spontaneous rupture of the gastroduodenal artery in a male aged 60 with arterio-sclerosis. Green and Powers (1931)—Sudden epigastric pain with rigidity after spontaneous rupture of the left gastric artery with a hæmatoma in the gastrophrenic omentum in a female aged 64 with a history of hæmorrhages (nasal ocular).

Buchbinder and Greene (1935)—Spontaneous rupture of a gastric artery in a male aged 57.

Moorehead and McLester (1936)—(1) Spontaneous hæmorrhage from junction of right and left gastrics both vessels being severely diseased. (2) Spontaneous rupture of an aneurysm of the superior mesenteric artery. The respective ages were 44 and 50 years.

From a study of the recorded cases two facts emerge: (1) hypertension is an invariable accompaniment. (2) the age-incidence is between 44 and 60 (average 52). In only one case is there positive evidence of aneurysm formation and on this account the next case which I am reporting is of interest. I am able to include it through the kindness of Mr C F W Illingworth under whose care the patient was

CASE 3.—For some days the patient, a man of 75 had complained of being slightly off colour. Before this he had had some difficulty in securing regular evacuation of the bowel and had required a daily aperient. On the day of admission he was seized with sudden pain in the upper abdomen and for some hours this was attended by repeated vomiting of food material. When examined after admission he was found to have a subnormal temperature and a feeble rapid pulse. His tongue was dry and furred and he looked ill. Investigation of his abdominal condition revealed a prominent ballooned and tender cæcum; the tenderness was continued over the whole distribution of the colon but there was no rigidity and no swelling could be detected. There was dullness in both flanks and a diagnosis of acute obstruction supervening on a chronic malignant obstruction was made.

At operation a massive intraperitoneal hæmorrhage was disclosed, a swelling could be discovered on palpation apparently in relation to the aorta and was taken to be an aneurysm and the abdomen was closed without drainage. The patient died a week later from broncho-pneumonia and post mortem examination showed an extravasation of blood in the general peritoneal cavity and in the transverse mesocolon. An aneurysmal dilatation was present on the middle colic artery and was the source of the hæmorrhage. The abdominal vessels were normal and the aorta itself showed only slight atheromatous changes with some degree of thickening of the aortic valves.

At first sight it seems most likely that the aneurysm in this case was secondary to arterio-sclerotic vascular degeneration. Yet the remainder of the abdominal vasculature was healthy. It is a fact nevertheless that abdominal aneurysm can occur in the absence of degenerative changes in the arterial wall for Budde (1925) has recorded a case of fatal rupture of an aneurysm of the left gastro-epiploic artery in a man of 27 without evidence of arterio-sclerosis.

In view of these findings it seems impossible to exclude as a possible cause of these aneurysms a congenital weakness of the vessel wall akin to that which leads to aneurysm of the basal cerebral arteries. Forbus (1930) in his classical account of congenital aneurysms has shown that they tend to form at the points of branching of the arterial tree and their occurrence is favoured by the special mode of formation of the arteries. In the development of an artery the larger trunks acquire a muscular coat while their smaller branches remain for a time as simple endothelial tubes. Later on the branches acquire muscular coats not as outgrowths from the muscle of the parent vessel but as independent

developments in situ from the surrounding undifferentiated mesenchyme. At the line of junction between branch and trunk the respective muscular coats meet, and should fuse solidly. It is in an imperfection of the latter process that the explanation of the aneurysm lies, for the persistence of a gap or the occurrence of a "weak joint" creates a *locus minoris resistentiae*, at which "blowing out," with the production of aneurysm, may occur.

The rupture of a congenital aneurysm has attracted most attention when the intracranial vessels are involved. Forbus himself has drawn attention to the possibility of a similar accident in relation to other vessels, and indeed his views of the origin of the lesion were based on his studies of the development not of the intracranial vessels but of the mesenteric vessels. Reports of multiple military aneurysms of this nature in the coronary and mesenteric vessels have been made by Eppinger (1887) and by Gee (1871), and in relation to the pulmonary vessels by Wilkins (1917), and the renal arteries by Forbus (1930).

While it is impossible to be dogmatic about the third case, the probabilities favour such an explanation in the case of Budde, in the cases of Hartley and MacKechnie, and in my own, it seems, in view of the comparatively early age and the other considerations, that the hæmorrhage may well have originated in a military aneurysm, or in a spontaneous rupture at one of the numerous junctional areas on the mesenteric arterial tree, and in these two cases the clinical course offers a similar contrast to that of the massive or apoplectic type of rupture, and of the "leak" in the basal cerebral aneurysm. The premise unfortunately cannot be held to be proved, but the suggestion is made here in the hope that it may lead to more detailed investigation if similar cases are encountered by others.

It may also be of interest to record the mode and results of treatment in hæmoperitoneum from vascular causes, as illustrated by the cases I have reviewed. In the arterio-sclerotic cases ligation of the bleeding vessel was undertaken and has always proved successful, whereas in cases where the bleeding point was not definitely established, and where no treatment was carried out, the patient died. Both cases of established aneurysm were fatal, but in one of the two cases in which definite aneurysm was not found the patient recovered.

CONCLUSIONS

In the female the likeliest source of spontaneous hæmoperitoneum is the pelvic viscera, especially the ovary and tube. In the male the most common source is one of the mesenteric vessels, and a systematic search for the bleeding point should be made, since ligation greatly increases the chances of survival.

I am indebted to Sir John Fraser for the opportunity of treating the first two cases and for permission to record them. I am also grateful to Mr Illingworth for permission to refer to his case.

REFERENCES

- Bailey H (1929-30) *Brit J Surg* 17 417
 Box C R and Bamforth J (1925) *Lancet* 2 1115
 Bruce H H (1920) *Ann Surg* 90 770
 Buchbinder J R and Greene, E I (1935) *J Amer med Ass* 105 574
 Budde M (1925) *Munch med Wochr* 72 1383
 Churchman J S (1911) *Amer J med Sci* 142 825
 Dudgeon L S and Sargent P W (1905) *Lancet* 1 474
 Eppinger H (1887) *Arch Chir* 25 Supplement
 Ern-4 H and Gammeltoft S A (1921) *Act obstet gynec scand* 7 104

(Continued at foot of next column)

DIAPHYSECTOMY IN ACUTE OSTEOMYELITIS*

By A. L. D'ABREU, Ch M Birm, F R C S Eng
 SENIOR ASSISTANT TO THE SURGICAL UNIT, THE WELSH NATIONAL SCHOOL OF MEDICINE, CARDIFF

LOWER death rates for acute osteomyelitis have been recorded by those who prefer conservative and limited measures to the old "gutter" operation (Holman 1934, Tyrrell Gray 1934, Greene 1934). This paper must not be misconstrued as an appeal for radical treatment. Since the disease is a systemic infection followed by a local lesion, death that in the acute stage is due to septicaemia or pyæmia will not be prevented by guttering, shaft resection, or amputation. Such measures indeed increase the burdens of a critically ill patient. When the local lesion predominates, suppuration in the metaphysis spreads outwards to form a subperiosteal abscess, this sequence usually precedes a true myelitis. In children and especially in infants extensive stripping of the periosteum may not cause necrosis, so adequate is the blood-supply from the nutrient vessels. Exceptionally, early medullary infection coincides with the periosteal abscess, but more usually myelitis develops later as an inward spread along the Volkmann's canals from the subperiosteal abscess, rather than as a direct extension from the metaphyseal pus (Starr 1922).

CRITICISM OF THE GUTTER OPERATION

It is difficult to believe that the gravity of acute osteomyelitis depends upon the rigidity of bone, firstly because of the ease with which pus finds its way into the subperiosteal space, and secondly because in children the disease though arising within more porous bone—because of its greater vascularity—is far graver than in adults. It is more reasonable to ascribe the serious signs and symptoms of juvenile osteomyelitis to rapid absorption of toxins from the marrow, for the blood-vessels in growing shafts are arranged in sinusoidal form to enable blood cells—and hence bacteria—to gain ready access to the general blood stream. Such blood spaces are not found in adult bones.

Sound treatment, as in the case of cellulitis, avoids operation until there is a subperiosteal abscess. At the first operation incision of this suffices, rest to the patient and complete immobilisation of the affected limb, preferably in plaster, follow. If at operation the bone is bleeding there is no need to

* This paper is based upon a section of a thesis presented for the degree of Ch M of the University of Birmingham.

(References continued from previous column)

- Forbus W D (1930) *Bull Johns Hopk Hosp* 47 239
 Gee S J (1871) *St Bart's Hosp Rep* 7 147
 Green W T and Powers J H (1931) *Ann Surg* 93 1070
 Hartley H and MacKechnie D M (1934) *Lancet* 1 280
 Hilliard J W (1918) *Brit med J* 1, 231
 Moorehead M T and McLeister J S (1936) *J Amer med Ass* 106 373
 Ogilvie W H (1922) *Guy's Hosp Rep* 72 219
 Osler W and McCrane T (1925) *Modern Medicine* London, vol 3 p 813
 Peck C H (1905) *Ann Surg* 42 597
 Phincaut L E (1924) *J Amer med Ass* 83 658
 Pyrah L N, Stanfield F R, and Garland H G (1930) *Brit med J* 1, 810
 Starcke G (1923) *Ugeskr Laeg* 85 963
 Whipple G H and Sperry J A (1900) *Bull Johns Hopk Hosp* 26 278
 Wilken* G D (1917) *Beitr Klin Tuberk* 38 1
 Williams F A (1935) *Proc Mayo Clin* 10, 73



FIG. 1 (Case 1).—Left: radiogram 10 days after partial diaphysectomy of femur, new bone is already being laid down the wound is being irrigated through Carrel-Dakin tubes. Centre: radiograms at intervals during the nine months after the operation the new shaft is completely re-formed. Right: radiogram two years after operation there is no deformity except for a little backward bowing.



FIG. 4 (Case 4).—Radiogram seven months after complete diaphysectomy of the fibula.

drill or trephine since this sign indicates a healthy marrow and the absence of myelitis usually the evacuation of the subperiosteal abscess will prevent marrow involvement. The gutter operation would only expose further bone to infection while it adds the risk of sequestrum formation. If however the bone does not bleed even after drilling extensive

INDICATIONS FOR DIAPHYSECTOMY

Successful shaft resection by removing the diseased area diminishes though does not always prevent sequestration and gives splendid drainage to the subperiosteal space. The risk of non regeneration in children has been exaggerated it can be prevented by care in the selection of cases (to be described later) in the technique and in the after treatment, where adequate and prolonged immobilisation is essential. The operation is unjustifiable in patients over 10 for regeneration is too uncertain in adult shafts or in infants when the most extensive periosteal



FIG. 3 (Case 3).—Left: radiogram five months after diaphysectomy showing an apparent pseudoarthrosis. Right: complete regeneration of fibula in eight months.

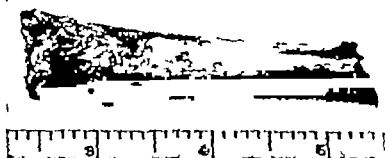


FIG. 2 (Case 2).—Portion of fibula removed.

stripping may not cause necrosis. In the fibula it is the operation of choice even to the exclusion of simple drainage for non regeneration is rare and does not prevent a good functional result and rapid healing.

CHOICE OF PATIENTS

Apart from osteomyelitis of the fibula, resection is unjustifiable until simple periosteal incision combined sometimes with metaphyseal drainage and followed by plaster case immobilisation has been tried. If the temperature persists after four days the wound is reopened and any abscesses drained. If however the periosteum is widely stripped the shaft is drilled by the technique described by Frazer (1934). If no bleeding follows the shaft is dead or occupied by pus and will form a large sequestrum.

guttering will not save it for its blood supply has already gone nor will it provide adequate drainage for the pus lies mainly without and not within the shaft; while sequestrum formation will not be prevented by so incomplete a removal if the shaft is necrosed. In such conditions shaft resection is superior to the gutter operation and may replace amputation.



6

FIG 6 (Case 5)—Radiogram a year after operation showing incomplete regeneration with pseudoarthrosis



7

FIG 7 (Case 6)—Abscess cavity in the centre of a shaft which shows chronic osteomyelitis

it should therefore be removed in preference to futile guttering. As already said, resection in the presence of an adherent periosteum is unjustifiable, for revascularisation of the shaft may follow.

THE CASE AGAINST DIAPHYSECTOMY

Greig (1933) correctly says that bone is at the mercy of its blood supply, being decalcified by the hyperæmia of infection. In acute osteomyelitis the liberated calcium is redeposited within the periosteum to form the new involucrum and failure

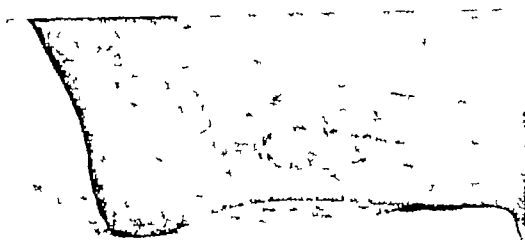


FIG 5 (Case 5)—Wound after partial diaphysectomy of fibula

of bone regeneration is to be expected after diaphysectomy as the available calcium is removed, he says the shaft should not be removed until new bone is well developed. Since dead and avascular bone does not readily yield its calcium the argument loses force, and even in the absence of a shaft the inflamed periosteum, already rich in calcium and osteogenic properties, rapidly lays down new bone.

Clinical Experience in Seven Patients

No account is given of the operation in the phalanges, metacarpals, or metatarsals but here I have seen successful results. In all instances diaphysectomy has been done before an involucrum had formed.

CLAVICLE

In my first patient, complete bone regeneration followed resection of an entire clavicle after periosteal incision and bone drainage had failed (d'Abreu, 1933).

CASE 1—In a boy of 14 with acute osteomyelitis of the outer end of the clavicle, a subperiosteal abscess—containing staphylococci—was opened. The temperature fell, but three days later the length of the clavicle was exquisitely tender. I operated again, found pus under the whole length of the periosteum, and performed complete diaphysectomy. Ten days later a large mass of callus was palpable. The patient, who had been immobilised with a long sand pillow between the scapulae, was then allowed to use the arm freely. A radiogram taken 22 days after the diaphysectomy showed a massive bone deposition. Five weeks after the operation the function of the upper limb was normal. Palpation revealed a normally outlined clavicle.

FEMUR

The second case is one of acute osteomyelitis of the femur with diaphysectomy followed by recovery and bone regeneration. (I am indebted to Mr Geoffrey Keynes for permission to include this patient upon whom he operated.)

CASE 2—A boy, aged 6, was admitted to St Bartholomew's Hospital with acute osteomyelitis of the lower end of the right femur, at 10 o'clock on the morning of admission the lower end of the femur was exposed and a subperiosteal abscess drained, but as at 7 p.m. on the same day he remained critically ill a second operation was performed. To save amputation most of the shaft of the femur was resected subperiosteally and a



8

FIG 8 (Case 7)—Resected portion of shaft. Note the drill holes through which pus was located at the second operation and the original window drainage of the metaphysis.



9

FIG 9 (Case 7)—Lateral radiogram of the regenerated tibia.

blood transfusion given, the wound was left widely open and irrigated by the Carrel-Dakin method, the pus contained staphylococci. The limb was carefully splinted with extension maintained by skin strapping.

Progress—Sixteen days after the operation measurement of both lower limbs did not detect any shortening or lengthening. A radiogram taken on that day showed

that new bone was being laid down (Fig 1). The extension was maintained for eight weeks at this stage on measurement the affected lower limb was 1 cm longer than the normal side; a radiogram showed good alignment and a newly formed shaft. Progress was extremely satisfactory although small sequestra had to be removed on three occasions a ring sequestrum being removed six months after operation one a year after diaphysotomy and the last a year and two months after the first admission.

Result.—He was seen in July 1930 when the wound was soundly healed and again in 1932 when he was a well-developed boy with a sound femur. Radiograms taken over a period of nine months after operation showed excellent bone regeneration (Fig 1).

Comments.—In the bone apparently most unsuitable for diaphysotomy owing to its inaccessibility its importance in weight bearing and lack of a companion bone an excellent result can be obtained. Great care in maintaining accurate extension and guarding against backward bowing prevented deformity. The operation was an excellent substitute for amputation, giving adequate drainage in a critically ill child. Diaphysotomy should have no place in the routine treatment of osteomyelitis of the femur but if after periosteal incision and drainage of the metaphysis has failed resection of an avascular shaft is preferable to extensive guttering or amputation. Rankin (1927) has published some splendid results in the femur after resection.

TIBULA

There is no safer or more humane treatment of acute osteomyelitis of the tibia than early excision of the affected bone and primary union of the wound may follow (see Fig 5).

CASE 3.—A boy aged 12 provided a typical example. He had severe pain over the lower end of the left tibia for five days before coming to hospital. On the day before admission there had been a rigor. There was a brownish red swelling over the tibia at its lower part.

Operation.—Through an incision over the lower third of the bone the peroneal muscles were displaced laterally and posteriorly. Pus was found between the periosteum and the bone for a distance of 2½ in. The bone was divided 3 in. above the epiphyseal cartilage and the lower portion of the diaphysis avulsed; it separated easily from the epiphyseal cartilage which was left behind and intact (Fig 2). The wound was lightly packed with vasoline and the limb immobilised on a splint.

Progress.—On the 10th day the wound was healthy; a light plaster cast having been applied he was discharged well and free from pain; the wound was completely healed within four weeks of the operation. He was allowed to walk three weeks after the operation the light plaster being discarded six weeks after admission.

Result.—A radiogram taken 10 days after the resection showed new bone. Six months later the shaft was almost completely re-formed but there was an appearance suggesting a pseudo-arthritis (Fig 3). The gap however disappeared and the bone regenerated completely (Fig 3).

CASE 4.—In a girl of 9 although regeneration was quite satisfactory after an extensive diaphysotomy (Fig 4) it was feared that since for some weeks she could not extend the big toe the external popliteal nerve had been injured at the operation but also recovered so rapidly that it was probably due to temporary removal of its origin of the extensor hallucis proprius. As the bone regenerated so the power of extension returned. The wound has remained soundly healed since operation.

Incomplete regeneration.—Although this was seen once there was no loss of function. This was in a boy of 11 (Case 5).

At operation pus was found subcutaneously and had burst through the periosteum which was found to be lifted from the bone; the lower quarter of the tibia was removed

and avulsed from the epiphyseal plate. The wound was wiped out with flavine and lightly closed. Progress was entirely satisfactory and the wound healed almost by the first intention, the boy being discharged 13 days after operation and allowed to walk (Fig 5). Bone regenerated imperfectly slowly and irregularly. An ominous gap existed two months after the operation. This gap though diminished still existed six months later. A radiogram taken a year after the operation showed permanent non union (Fig 6). Union is impossible without operation, but as there is no disability this is of course unjustifiable.

Incomplete regeneration is difficult to explain. Bigard (1935) has shown that resection of periosteum successfully prevents bony regeneration and at the operation on this boy I probably damaged a part of it. Lortholair (1935) also comments on the necessity of preserving the integrity of the periosteum and refers to unsatisfactory results following its damage.

Adults.—Since non regeneration is not satisfactory in adults diaphysotomy should not be carried out in these on any bone other than the fibula. The operation has been done once in an adult.

CASE 6.—A man aged 23 complained of painful swelling in the mid shaft of the left fibula. When he was 15 years of age he had severe pain in the leg for a week which was treated by hot fomentations until an abscess formed and broke; this abscess took six months to heal. After that he had several recurrences of pain and of discharge. There was a fluctuant swelling half way down the fibular shaft the whole length of which was enlarged. A radiogram showed a Brodie's abscess situated in the mid-shaft (Fig 7).

Operation.—A subcutaneous abscess was opened and led down to greatly thickened bone; the portion of bone containing the abscess was removed and after the wound had been lightly packed with vasoline gauze the leg was immobilised in a plaster cast.

Result.—The wound healed well. There has been no bone regeneration but function is normal.

Comments.—In these cases of shaft resection of the fibula the disease was rapidly arrested. Sequestrum formation avoided and rapid healing obtained.

TIBIA

The following is a case of osteomyelitis of the tibia in which metaphyseal drainage was performed followed later by diaphysotomy. It resulted in regeneration with some sequestrum formation.

CASE 7.—A boy aged 12, had had severe pain above the right ankle for some days. He was extremely ill flushed and restless with a temperature of 102½ and a pulse rate of 112.

First operation.—The lower third of the subcutaneous surface of the tibia was exposed. On incising the periosteum only a little pus escaped and a window of bone over the metaphysis was removed and pus was found in the marrow above the metaphysis was healthy and bled normally. The wound was lightly packed with vasoline gauze and the limb enclosed in a plaster cast from above the knee joint to the heads of the metatarsals.

Since the temperature and pulse-rate remained high on 1 the boy was still ill a second operation was performed (eight days later).

Second operation.—The plaster cast was removed the wound was extended upwards and an incision was found under the periosteum reaching up to the proximal half of the tibia. The tibia was drilled in three places. From the lower two holes pus exuded but healthy bleeding came from the highest bone puncture. Because of the extensive spread of pus both within and without the shaft extensive necrosis appeared inevitable and more than two-thirds were resected. The wide separation of the periosteum from the shaft made the use of a respiratory unnecessary. The bone separated easily from the lower epiphyseal cartilage (Fig 8). To prevent collapse of the tibia

periosteal tube, a glass rod was placed in its cavity. The wound was lightly packed with vaseline gauze and the limb encased in plaster.

Progress—With the temperature and pulse rate rapidly falling there was a marked improvement in the general condition. A radiogram taken 14 days after the operation showed new bone around the glass rod which was then removed under general anaesthesia. When the plaster had been removed the large wound looked healthy, the glass rod was lifted out and the whole limb again immobilised in plaster. The further progress was satisfactory, dressings being done at monthly intervals with the limb rigidly immobilised throughout in plaster. At the sixth dressing sequestra were removed from the upper and lower ends of the wound, the former being a ring sequestrum. At that time the shaft was well regenerated. The boy was discharged on Sept. 29th in a plaster to which was attached a Böhler's walking iron, the wound was not completely healed, but is now quite sound.

Result—As seen on radiograms bone was being reformed as early as on the fourteenth day after the diaphysectomy. Two months after operation a new shaft had reformed. The lower part at this stage was not so well regenerated as the upper. This deficiency coincided with a good deal of residual infection in that area and was no doubt due to the decalcifying effect of a local hyperaemia. Six months after diaphysectomy there was further bone formation to be seen on the radiogram. At this stage a sequestrum had appeared and was removed. Fig. 9 shows a lateral radiogram of the newly formed shaft, although a cavity is present this is symptomless.

Summary

Diaphysectomy is rarely required in the treatment of acute osteomyelitis since the results of conservative incision of a subperiosteal abscess are good when combined with general and local rest, in common with other radical measures it is unavailing when fulminating septicaemia overshadows the local lesion.

Extensive periosteal stripping does not imply certain necrosis, but when combined with true myelitis the shaft will largely die, in such patients resection diminishes sequestrum formation and provides splendid drainage of the pus in the periosteal tube. The gutter operation is unsound for it does not save sequestration nor provide adequate drainage, it is based on the faulty assumption that bone rigidity is the important factor in acute osteomyelitis. The theoretical objection that a valuable source of calcium is removed by diaphysectomy overlooks the inability of avascular bone to yield or acquire calcium. The operation is unjustifiable in infants and in adults, the optimum age being from 6-16. The procedure, except in the fibula where it is the operation of choice, must not be adopted until simple periosteal and metaphyseal drainage have failed and then only when there is certain proof of myelitis. An adherent periosteum requiring instrumental separation contraindicates resection.

The results in seven patients have been satisfactory. The epiphysis must be conserved and the resection need not proceed 1 inch beyond the affected portion of the shaft. The periosteum must be meticulously preserved from damage and adequate immobilisation provided.

REFERENCES

- Bisgard, J. D. (1935) *Arch. Surg. Chicago* 30 748.
 d'Abreu, A. L. (1933) *Lancet* 2 1369.
 Fraser, J. (1934) *Brit. med. J.* 2 539.
 Gray, H. T. (1934) *Ibid.* p. 272.
 Green, W. T. (1934) *Eng. J. Med.* 211 159.
 Grell, D. M. (1933) *Lancet*, 2 1263.
 Holman, C. C. (1934) *Ibid.* 2, 867.
 Kernes, G. L. (1937) Personal communication.
 Lortholoff, P. (1935) *J. Chir. Brux.* 34 169.
 Rankin, W. (1927) *Glasg. med. J.* 107 193.
 Starr, C. (1922) *Arch. Surg. Chicago* 4 567.

MEDIASTINAL GANGLIO-NEUROBLASTOMA

By F DUDLEY HART, M.B. Edin

MEDICAL REGISTRAR AT THE ROYAL NORTHERN HOSPITAL, LONDON AND

P O ELLISON, M.B. Lond

PATHOLOGIST TO THE HOSPITAL

In 1870 Loretz discovered a tumour containing well differentiated ganglion cells, and so established the occurrence of neoplasms to which the term ganglioneuroma was applied. Later, as a result of further study of such tumours and increased knowledge of the anatomy and development of the sympathetic nervous system, tumours were recognised which were composed of undifferentiated sympathetic formative cells. Such tumours are now called neuroblastomata. In between these two extremes (benign and actively malignant) all degrees of intermediate tumours were found, and Landau (1912) and von Fischer (1922) have classified them under a variety of different headings. Such tumours, although commonly arising from undifferentiated sympathetic tissue in the region of the adrenal medulla, may also arise elsewhere from sympathetic nerve tissue in the abdomen, thorax, brain, cranial and peripheral nerves, and elsewhere. The neuroblastoma is well recognised, and descriptions of the Pepper and Hutcheson types can be found in all comprehensive text-books of paediatrics. The ganglioneuroma is uncommon, but is carefully described. The intermediate forms are rare, and so little attention has been given to them in this country that the present case is thought worthy of detailed description.

CASE REPORT

A boy, aged 6, was admitted to hospital on Jan. 25th, 1937, complaining of pain in the abdomen on and off for one week, pain in both knees and the left side of the face for one week, and small glands in the neck, painless and discrete, for four weeks. Previously he had been unwell for about a month. There had been no definite tonsillar infection noted. The pain in the knees was not acute but was made worse by movement. He had failed to gain weight for four months before admission. There was no history of cough, fever, or acute systemic upset. He had slept well, remained fairly cheerful, and had a normal appetite until one week before admission. He had had measles and chicken pox over a year ago.

Examination—Temperature 102.7° F., pulse rate 124, respiration rate 26. A thin boy, somewhat flushed but quite cheerful. Small discrete glands very slightly tender both sides of the neck. Left tonsillar gland enlarged. Small shotty painless glands in both axillae. Examination of cardiovascular and respiratory systems revealed nothing definitely abnormal. Abdomen slight tenderness in both iliac fossae, but no rigidity, liver and spleen not palpable. Joints slight pain experienced on moving both knees, also left hip, otherwise no apparent abnormality. Central nervous system normal, no rash. Blood white cells, 8000 per cmm (polymorphs 54 per cent, lymphocytes 40 per cent, mononuclears 6 per cent), no abnormal red or white cells seen. Mantoux negative 1 in 10,000, 1 in 1000, and 1 in 100.

Progress—The temperature came down to normal in four days but occasionally rose to 99°-100°. Pulse and respiration rates also fell correspondingly. On Feb. 16th temperature rose to 100.4°. Pains in the neck. Glands much as before, but slightly more tender. Throat normal. Blood white cells, 6000 per cmm (polymorphs 60 per cent, lymphocytes 32 per cent, mononuclears 7 per cent, basophils 1 per cent), 4 myelocytes and 2 normoblasts per 200 white cells. Sedimentation rate

53 mm in 1 hour (microscopical method). The urine presented no abnormalities. The temperature had settled by Feb 22nd when a radiogram showed an oval mass behind the heart alongside the vertebral column in the posterior mediastinum (Fig 1). Feb 25th; blood picture as before, general condition improved.

On March 6th he was very restless, with acute pain in the left knee. Movements free and painless at the knee, but much pain experienced on attempting to move the left hip, where the muscles were in spasm. Adduction, abduction, and flexion all equally painful. Nothing abnormal noted in the spine. Spleen not palpable. Left leg was put in extension. He rapidly improved but an intermittent pyrexia persisted. Temperature 100.2. Pulse-rate 180. Later (March 12th) he had acute pain in the other hip with similar findings.

Operation by Mr F. D. Saner under general anaesthesia. March 18th. Left side of chest explored with a needle. No fluid found but some resistance offered to the needle. A portion of the ninth rib was removed and an encapsulated tumour removed without difficulty from the posterior mediastinum. It was extrapleural with no adhesions bar

cytoplasm; they vary somewhat in size and shape and on careful search all stages between the small undifferentiated cell and the large pale ganglionic cell can be found. In addition rosette forms consisting of small deeply staining coils arranged peripherally around a fine fibrillar stroma are well shown (Fig 5). The tumour therefore shows features of both neuroblastoma and ganglioneuroma and is best described as ganglioneuroblastoma.

Further progress.—On March 23rd he was recovering from the operation. Pale. A blood count showed: haemoglobin, 45 per cent; red cells 2,600,000; colour index 0.8; reticulocytes 3 per cent; white cells 7000 (polymorphs 60 per cent; lymphocytes 29 per cent; mononuclears 6 per cent; eosinophils 4 per cent; basophils 1 per cent); 4 megakaryoblasts; 1 normoblast; 3 myelocytes and 1 myeloblast per 200 white cells; many hypochromic red cells; some anisocytosis and polychromasia.

May 3rd: the child is still anemic, but is cheerful, happy and free from pain. He has latterly been allowed up and walks well. He occasionally gets slight pain in the left knee as before. His haemoglobin 65 per cent on April 23rd is now 65 per cent. His red cells had risen as high as 4 millions per cmm. but have now dropped to 73 millions. His colour index has varied from 1 to 0.7. Immature red and white cells persist as before. Radiography has shown nothing abnormal in the hips or spine. It was thought his spleen could be felt following the



FIG 1.—Radiogram (antero-posterior) showing mass in mediastinum partly obscured by shadow of heart.

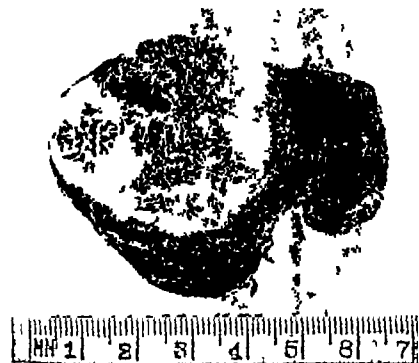


FIG 2.—The tumour cut in half showing the pale outer ganglioneuromatous part and the malignant inner core of neuroblastomatous tissue.

a few loose connexions to the surrounding structures. It was lying alongside the vertebral bodies opposite thoracic vertebrae 7-11. There were no definite connexions at its lower pole.

Pathology.—The tumour was encapsulated with a firm yellow white cortex and a red "medulla" which in places came near the surface. Irregular in shape 2½ in. long 1½ in. wide 1½ in. thick (Fig 2). Paraffin sections were prepared from the solid outer portion of the tumour and from the adjacent haemorrhagic area. The stains used were Ehrlich's haematoxylin, Anderson's iron haematein, orxlin and eosin and van Gieson as counterstains. The outer portion of the growth shows a groundwork of very fine longitudinal fibrils accompanied by flattened nuclei running in the same direction. This tissue is arranged in rather ill-defined bundles with loose connective tissue between them. Somewhat sparsely scattered throughout there are collections of pale staining cells without any definite arrangement (Fig 3). Some of these cells are very large others quite small and there are many intermediate forms. These features are characteristic of a ganglioneuroma and it may be noted that the resemblance to sections of sympathetic nerve ganglia is striking though of course the histological picture is not absolutely identical.

The central portion of the tumour shows an active neoplastic process, accompanied by haemorrhage and necrosis. The growth consists of deeply staining cells arranged in masses of varying size (Fig 4). The cells themselves are small and rounded and contain very little



FIG 3.—Outer part of tumour. Section shows large cells resembling those of ganglioneuroma. (x 250.)

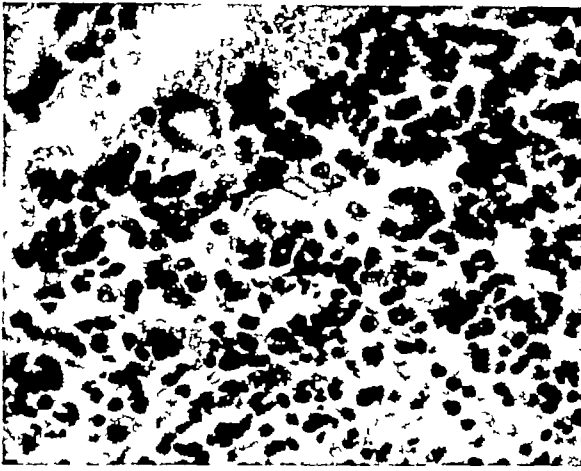


FIG 4—Central part of tumour showing large pale pre-ganglionic cell and small deeply staining undifferentiated cells ($\times 380$)

transfusion, but at no other time. The glands on the right side of his neck are definitely larger now. His central nervous system seems normal. A histamine test-meal reveals no abnormality. His temperature occasionally rises and falls over an 8-18 day period (Fig 6) and is normal between, with occasional rise in the evening to 99° - 99.7° .

Other treatment—He has had one blood transfusion, and is having a liver extract and iron.

DISCUSSION

The case is of interest because, although the tumour is malignant, histologically and clinically, it comes half way between the benign true ganglioneuroma and the highly malignant neuroblastoma, and corresponds to the ganglio neuroblastoma of Robertson (1915) or the neuroblastoma gangliocellulare of von Fischer. In the section the cells of different stages of development are well seen, small round cells resembling small lymphocytes, larger cells resembling large lymphocytes with vesicular nuclei, and even larger cells running up to immature ganglion cells. These cell types correspond to the sympathogonia and sympathoblasts described by Wright (1910). Such a tumour is usually discovered later than the highly malignant completely undifferentiated neuroblastoma, and sooner than the benign ganglioneuroma which may, indeed, be entirely silent and discovered unexpectedly at autopsy. Metastases occur, but the whole picture is a slower, gradual one.

In this case metastases have almost certainly occurred. The X ray appearance suggests a cord of

tissue running to the region of the left adrenal. Pruns in the lower limbs were noted in some of the cases described by Frew (1911), and Stout (1924) described a case of a child, aged 21, who complained of weakness in the legs. Death followed attempts to remove a left-sided adrenal ganglio neuroblastoma and an ingrowth was found passing from the tumour through the intervertebral foramen to cause compression of the cord. The leg pruns in the case described here may be due to a similar cause.

The anaemia is of interest. It differs from the simple microcytic anaemia usually described in such cases in having many immature red and white cells in the circulation and many large red cells. The colour index has varied from 0.7 to 1. It appears to be a leuco erythroblastic anaemia, possibly due to secondary deposits in bone. In view of the potential malignancy of these tumours, even the more benign form early removal is indicated. Even so, the prognosis is bad in this case.

The radiological findings allowed an early diagnosis to be made. In a straight antero posterior view

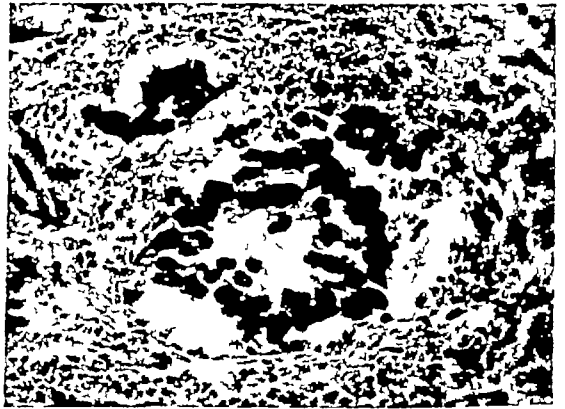


FIG 5—Cells arranged in rosette form ($\times 380$)

nothing was seen at the normal density as the tumour was hidden behind the heart. An oblique view, however, revealed it, and lateral and hard antero posterior pictures revealed the true extent and size of the mass. Such a large mass, however, gave no definite physical signs, and the X ray reports came as a surprise. There is no radiological evidence of metastases in the bones, but the glands in his neck are increasing in number and size, and it is likely that they are secondary to a lymphatic spread.

Our thanks are due to Dr Bernard Schlesinger for his permission to publish this case and for the great help he has given us.

REFERENCES

- von Fischer R F (1922) *Frankf. Surg. Z. Path.* 28: 603
- Frew R S (1911) *Quart. J. Med.* 4: 123
- Landau M (1912) *Frankfurt Z. Path.* 11: 26
- Loretz W (1870) *Firchows Arch.* 220: 147
- Robertson H E (1915) *Ibid.* 220: 147
- Stout A P (1924) *J. Amer. med.* 48: 82, 170
- Wright F H (1910) *J. exp. Med.* 12: 559

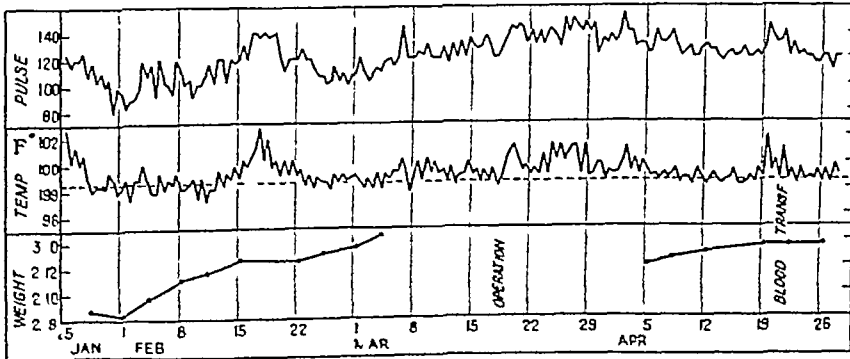


FIG 6—Pulse temperature and weight chart

CLINICAL AND LABORATORY NOTES

PANCREATIC CANCER WITH DIABETES

By F. PIGOTT M.B. Liverpool D.P.H.

LATE ASSISTANT RESIDENT MEDICAL OFFICER, MILL-ROAD INFIRMARY LIVERPOOL

AND THE LATE

H. OSBORN D.M. Oxon, D.P.H.

PATHOLOGIST TO THE SOUTHERN GROUP LIVERPOOL MUNICIPAL HOSPITALS

CANCER of the pancreas and diabetes mellitus are common diseases in medical practice but it is rare to meet both in the same patient. The usual sequence is for the cancer to supervene on the diabetes for clearly there is no reason to think that a diabetic is any less liable to develop cancer of the pancreas than an ordinary person. In the patient whose history is given below this order was reversed and the diabetic state was the result of the pancreatic neoplasm.

Malignant disease of the pancreas most often affects the head and/or body of the gland leaving the tail which contains the greater part of the islet tissue uninvaded until a very late stage. Hence the symptoms are the outward expression of biliary and pancreatic obstruction and not of disturbed carbohydrate metabolism. A neoplasm commencing in the tail of the pancreas would not be likely to give rise to any obstructive signs or symptoms but rather would show itself by an upset in the carbohydrate balance.

The frequency of carcinoma of the tail of the pancreas is about one thirtieth that of the rest of the gland. Ewing (1928) collected 358 cases of cancer of the pancreas and in 12 of these the disease was primarily confined to the tail. Fletcher (quoted by Osler) recorded 58 cases of pancreatic new growth among 42,000 admissions to the Johns Hopkins Hospital, the diagnosis being confirmed in 31 cases at autopsy. On this basis one would expect one case of cancer of the tail of the pancreas in about 30,000 hospital admissions.

CASE HISTORY

The patient was a printer aged 58. For three or four months before entering hospital he had been working in another town some distance from his home. During this time he noticed increasing lassitude followed later by a sense of complete exhaustion. He said that at the beginning of this period he had had slight swelling of the legs lasting for a few days. For six weeks his thirst had greatly increased and he had suffered from severe polyuria. His appetite was very poor and he had lost weight. For the last month he had noticed that he had a small swelling in the left side of his neck and that his voice had become hoarse. He gave a history of pneumonia and pleurisy four years before.

His nutrition was very poor. He had that laxity of the skin which follows intense dehydration and loss of weight. There was no icterus of the skin or conjunctiva; no oedema of the ankles and moderate clubbing of the fingers. There was no smell of acetone in his breath. His pulse rate was raised (100 per minute) but his temperature and respiratory rate were normal. He had a small ovoid swelling in the left lobe of the thyroid which had caused a slight deviation of the trachea to the opposite side. His peripheral arteries were moderately sclerotic. No abnormal physical signs were made out on systematic examination. A specimen of his urine freely reduced Fehling's solution but contained no acetone or diacetic acid. A quantitative analysis the following day showed 2.5 per cent of glucose and a later examination

3.5 per cent. The fasting blood-sugar was 250 mg per 100 c.c.m. on the day after admission.

Sputum examination was negative for tubercle bacilli and X ray films of the chest revealed no abnormality. Unfortunately he was not well enough to submit to a laryngoscopy. He was put on to a diet of milk, 7 oz four hourly with water ad lib. No insulin was given. His lack of appetite and poor general condition prevented the addition of solid food to the diet. He was entirely confined to bed. Soon after entering hospital he complained of abdominal pains which were not severe at first but later increased in intensity. Nothing apart from slight generalised abdominal tenderness could be found to account for them. His bowels were acting normally. On the seventh night after admission he was kept awake by an intolerable desire to have a bowel action. In the early hours he called for a bed pan suddenly began to sweat, collapsed, and died.

An autopsy was performed the same day. A large mass, the size of a grape-fruit, occupied the site of the tail of the pancreas; the head and body were not involved. The left lateral portion of the tumour was necrotic and a loculated cavity had been formed by adhesions between it and the splenic flexure of the colon, and a portion of the peritoneum of the lesser sac. The cavity was filled with old and recent blood clot. The left kidney had two small secondary deposits beneath the capsule. The liver was normal and there was no biliary obstruction. The thyroid was enlarged mainly on the left side due to secondary metastases. The larynx was normal in appearance. The lungs were oedematous and the heart showed some degree of myocardial degeneration.

Microscopic sections of the primary growth and of the secondary deposits in the kidney and thyroid showed the same characters. Dr Osborn's report was: "The histological appearances are typical of the more embryonic type of carcinoma of the pancreas, having a superficial resemblance to lymphosarcoma. The cancer cells are small, darkly staining with little cytoplasm and arranged loosely in masses. The islets in the adjoining portion of pancreatic tissue seemed normal in structure."

HISTORICAL SURVEY

Gerard Kissel and Pötty (1932) record a case of moderately severe diabetes with pancreatic deficiency in a male aged 45. At autopsy the pancreas was one mass of growth and metastases were present in the liver, left kidney, colon and mesocolon. Army Jones and Wood (1931) describe a case of diabetes with fatty diarrhoea due to carcinoma of the pancreas. Velazquez (1932) records another case of pancreatic diabetes complicating cancer of the head of the pancreas.

The frequency of cancer of the pancreas in diabetics was studied by Marble (1934) who followed the after histories of 1000 diabetics. Of these 256 died of cancer—in 35 cases from cancer of the pancreas (21 were confirmed at necropsy). No case was found in which the head was not involved. In 4 cases the whole gland was affected but the tail to a less extent than any other part. In every case the neoplasm supervened on the diabetes.

Gibbs and Logan (1929) reported the results of 147 autopsies on diabetic patients. No mention is made of growth being found in the pancreas on any occasion. Incidentally they found apparently normal islets present in 11 cases.

SUMMARY

A case of diabetes mellitus and carcinoma of the tail of the pancreas is reported. The history and findings at autopsy make it clear that the diabetes was the result of the pancreatic new growth. Unfortunately the patient's condition did not allow

us to perform a glucose-tolerance test, which might have produced an interesting curve

We feel impelled to publish this case, not only because of its rarity, but also to stimulate interest in the collection of further post-mortem evidence in diabetes mellitus, a disease whose aetiology from a pathological point of view is still incompletely worked out

I greatly regret that owing to the untimely death of Dr Osborn it has been impossible to produce an adequate photomicrograph of the sections.—F P

REFERENCES

- Ewing, J (1928) *Neoplastic Diseases* p 746
 Fletcher T B (1930) Quoted in Osler's *Principles and Practice of Medicine* p 601
 Gerard Kiesel, and Pétry (1932) *Rev méd Est*, 60 373
 Gibbs, W F and Logan V W (1929) *Arch intern Med* 43, 376
 Marble, A (1934) *New Engl J Med* 211, 339
 Urmv, T V, Jones, C M and Wood, J C (1931) *Amer J med Sci* 182 662
 Velazquez, B L (1932) *Arch Fac Méd Zaragoza* 1 288

THE USE OF STENT COMPOSITION IN RADIUM TREATMENT OF CARCINOMA OF THE VAGINA AND URETHRA

By CLIFFORD WHITE, F R C P Lond, F R C S Eng, F C O G

SENIOR OBSTETRIC SURGEON TO UNIVERSITY COLLEGE HOSPITAL LONDON

Excision of a carcinoma of the vagina or urethra is generally agreed to be a most unsatisfactory operation and one which can only be attempted in unusually early cases. The results of operative treatment have been so depressing that most gynaecologists now prefer to use radium, although the growth is not of a type which is usually very radio-sensitive. In using interstitial radiation for a carcinoma of the vagina by inserting radium needles of suitable length into the growth the immediate

difficulty is that only short needles can be used without a grave risk of penetrating the bladder, urethral canal, or rectum. An exception is when the carcinoma happens to be low on the posterior wall of the vagina, but this is rare and such cases are suitable for treatment by excision. Short needles inserted into vaginal growths almost always fall out even if the vagina is thoroughly plugged, and in the case of a carcinoma of or near the urethral orifice plugging is not feasible. Thus attempts have been made to secure the radium needles or the boxes containing the radium needles to the wall of the vagina or urethra by catgut sutures. This is technically not easy to do, as superficial sutures cut out of the tissues and deeply passed sutures may perforate the adjacent viscera thus accelerating fistula formation.

To avoid some of the above difficulties, I have used Stent's Dental Composition (Porro and Co, New Cavendish street, London, W 1) in some six cases during the last three years. The wax composition is heated till it can be moulded to the length and size of the vagina—a small senile vagina takes about one of the tablets and a capacious vagina will require three. Having thus got an obturator which fits the vagina from the cervix to the urethra, the radium needles are embedded into that part of the surface of the obturator which will be opposite to the growth—i.e., in the case of an epithelioma of the urinary orifice, the needles are inserted into the upper part of the external end of the obturator and may extend more to the left or right according as the spread of the growth is more to one side or the other. The whole obturator is then covered with a piece of rubber glove which is tied at both ends with thick thread, the ends of the threads are left long to facilitate removal of the obturator by traction on them. I have usually inserted 30 to 45 mg of radium element according to the size of the growth and given a dose of about 1250 milligramme hours which may be repeated. So far this dosage has not resulted in early fistula formation.

A self retaining catheter is essential

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF THERAPEUTICS AND PHARMACOLOGY

At a meeting of this section on June 8th, with Dr DOROTHY HARE, the president, in the chair, a paper on

Hyperthyroidism and the Thyrotropic Hormone of the Pituitary

was given by Dr ARNOLD LOESER (Freiburg i. Br.). He said that in animals the typical symptoms of hyperthyroidism could be produced by administering thyroid hormone or by increasing the production and liberation of thyroid secretion by giving the thyrotropic hormone. After injection of the thyrotropic hormone into a young guinea pig the thyroid showed definite changes. Macroscopically it was enlarged and filled with blood, microscopically there was a decrease in the amount of stainable colloid, with growth of the acinus cells which became first cubical and then columnar, the lumen of the follicles became smaller and the picture resembled that of the human gland in Graves's disease. The changes could be observed in from 30 minutes to 12 hours after the injection and were also apparent when living thyroid tissue was treated with thyro-

tropic hormone in vitro. The hormone was therefore believed to act directly on the gland cells, it was inactive when given by mouth and could be separated from other anterior pituitary substances, the growth and gonadotropic hormones. The hormone was estimated by the changes induced in the thyroid and had been found to be present in very different amounts in the pituitary of different species. Estimated in Junkmann Schoeller units per gramme the comparative figures were ox, 250–500, sheep, about 1000, rat, 4000–8000, pig, 300, horse, 70, and man 150–1000. The content in human pituitary gland was greater in patients suffering from tuberculosis and allied chronic infections than in those with other pathological conditions. The histological changes in the thyroid gland were accompanied by a reduction of iodine content, whereas the iodine content of blood and urine increased, after treatment with thyrotropic hormone the metabolic rate was also raised in guinea pigs and humans on the first day, but reached a maximum after 6–10 days, the glycogen content of the liver was lowered only after about four days, as it was after administration of thyroxine. Injection of thyrotropic hormone also caused hypertrophy of the adrenals and a fall in their vitamin C content, increased appetite, loss of hair, loss in weight, tachycardia, changes in

the metabolism of the heart muscle, and finally the characteristic tremor seen in humans. These symptoms were not observed in thyroidectomised animals. On the other hand exophthalmos could be produced in the absence of the thyroid and Marine and Rosen therefore thought that the thyrotropic hormone irritated certain centres in the mid brain which controlled the sympathetic nerve to the eye.

Many observers have been unable to maintain the high rate of production and excretion of thyroid hormone in normal animals. In fact all the changes except exophthalmos, retrogressed to normal or even subnormal even though the administration of thyrotropic hormone was continued. Lethal thyrotoxicosis was not produced, apparently because the thyroid became refractory to the hormone. Loeb in America had attributed this to an inhibitory action of the thyroid hormone acting on the thyroid to prevent further action of the stimulator. Certainly the simultaneous administration of thyroid substance reduced the effect of the pituitary hormone but according to Kuschinsky the thyroxine acted on the hypophysis. Dr Loeser pointed out however that hypophysectomised animals also developed a refractory thyroid under the continued influence of thyrotropic hormone. For this reason he concluded that there must be a second factor in which the pituitary played no part. Collip and Anderson had first shown that such a second factor existed. They had found that the blood of rats which had been injected for many weeks with thyrotropic hormone was able to inhibit the action of the thyrotropic hormone in another animal. The origin of this substance in the body was unknown but appeared not to be the pituitary thyroid adrenals or ovaries. This antithyrotropic principle had been found in the blood of rats guinea-pigs rabbits dogs, sheep and horses after 4-6 weeks treatment with thyrotropic hormone. It had also been found in normal blood of animals and man but not in thyroidectomised animals nor in Graves's disease. Loeser and Trikojus had succeeded in concentrating the antithyrotropic principle and obtaining a stable powder 25 mg. of which would suppress the action of at least 10 units of thyrotropic hormone. The extracts were active when given by mouth. Their action was not type-specific for the thyrotropic hormone from one species (cattle) could produce in a second species (sheep) factors which could suppress in a guinea-pig the activity of a thyrotropic hormone obtained from a third species (pig). The antithyrotropic principle was produced only if thyroid tissue or thyroxine was present. Inorganic iodine was without effect in this connexion. The principle was effective only against the thyrotropic hormone.

The refractoriness of the thyroid in pituitary hyperthyroidism seemed to be an adaptation process to protect the thyroid against the thyrotropic hormone. It might work by limiting production of the hormone and its excretion from the pituitary or by harring the thyroid from the effect of the thyrotropic hormone. In either way the over-excretion of thyroid hormone did not occur. Experimentally both were feasible for the excretion of hormone from the pituitary could be limited by giving thyroxine. Engagement of the thyroid might be achieved by a substance or substances normally present in the blood the amount of which might be increased in hyperthyroidism. The principle seemed to act directly on the thyroid. The thyrotropic hormone therefore had not only the property of activating the thyroid gland but owing to the enhancement of the latter's function of bringing counter-regulatory processes which protected the organism against further stimulation from

the pituitary hormone eventually reproducing the original state of the gland.

Dr Loeser had found however that the organism's dual capacity to protect itself could be broken through by giving progressively increasing doses of the pituitary hormone. In this way he had been able to maintain and develop the signs and symptoms of hyperthyroidism until death supervened. He had shown this by giving equal total quantities of pituitary hormone to two series of animals, one receiving uniform doses, the other doses which were doubled every three days until death occurred. In the first group moderate changes which retrogressed were developed. In the latter group the thyroids of all the animals were much enlarged being on average five times as large as normal. The adrenals were also enlarged and there was fatty degeneration and diffuse necrosis in the liver and kidneys. These effects were observed only when the hormone dosage was progressively increased and indicated a pronounced thyrotoxic damage since they were a feature of Graves's disease. Dr Loeser thought therefore that a continuous state of hyperthyroidism could be produced in two ways. The first was continual animation of thyroid activity with the normal protective function still preserved—i.e. true pituitary hyperthyroidism. The second was failure of the protective mechanism with a constant or increasing animation of thyroid activity. The possibility of treating Graves's disease with highly active antithyrotropic factor was worth consideration in certain cases.

Dr C. L. CORE said that the thyrotropic hormone was unfailing in its action. Since he first heard of it he had wondered what its relation was to the aetiology of Graves's disease. He had tried to find out whether the hormone circulating in the blood was increased in that condition. The serum of patients with Graves's disease appeared to contain an antithyrotropic effect. In order to discover whether the thyrotropic hormone appeared in the urine in Graves's disease he had developed a chemical means of concentrating it but even when large quantities of urine were used he had found no evidence of increased excretion. In the literature there was extraordinarily little agreement as to whether the hormone was present in the blood in Graves's disease; the balance of opinion seemed to be that if it were present it was rather below normal and that it was slightly increased in myxoedema. On the whole it seemed that the hormone was behaving more as a friend than a foe to man in Graves's disease. There was little evidence so far that in that illness the hormone was produced in excess or was an aetiological factor.

Dr RUSSELL BRAIN had been interested in cases of exophthalmos with ophthalmoplegia. In some of them the exophthalmos progressed after partial thyroidectomy although the basal metabolic rate was lowered. These observations supported the views put forward by Marine and Rose.

Dr A. W. SPENCE had been unable to find any evidence of increased thyrotropic hormone in Graves's disease or in two cases of spontaneous myxoedema. In the literature the results were conflicting. Graves's disease had been divided into two groups, the larger due to primary hyperthyroidism the smaller to hypersecretion of thyrotropic hormone. The serum of patients might serve as an indication for diagnosis and treatment; some workers claimed success from deep X-ray therapy on the pituitary. Dr Spence had found antithyrotropic substances to be present in normal serum but not in the serum of Graves's disease; he thought that that disease might be due to lack of inhibiting substance rather than to excess of thyrotropic hormone.

Mr A S PARKES, F.R.S., said that the term "anti hormone" had first come from Montreal. Its meaning was not clear and he preferred to speak of antithyrotropic serum. He asked Dr Loeser whether he had made immunological tests with that serum, to which Dr LOESER replied that he had not. Dr Parkes had been unable to find any antithyrotropic factor in the blood of six normal sheep.

Dr LOESER said he thought Graves's disease might be due to too much thyrotropic hormone or to too little antithyrotropic principle.

SOUTH-WEST LONDON MEDICAL SOCIETY

At a meeting of this society held at the Bolingbroke Hospital on June 9th, with Dr T A CLARKE, the president, in the chair, the Bolingbroke lecture was delivered by Dr CHARLES E LAKIN who took as his title

Physical Signs Are They Worth While?

Dr Lakin said that his experience as a teacher and an examiner had convinced him that physical signs were receding from the important position once held in the minds of students. Radiology was to blame, for with its increasing use physical signs were regarded as unreliable, and time spent in gaining proficiency in examination as wasted. To argue in terms of radiology *versus* physical signs was an error, since radiology only provided another set of signs, confirming those found on physical examination or supplementing them. The X ray apparatus could not be carried in the waistcoat pocket, and anyone who had studied under the old masters knew how much information and certainty could be attained through physical examination alone. Interpretation of radiograms was often difficult and sometimes misleading, and he quoted a case where a patient had been kept in bed for many weeks on the strength of an X ray shadow (thought to indicate fluid) at one lung base, when physical examination would have shown no evidence of a pleural effusion.

Physical signs revealed the physical conditions of the organ studied, for example the volume, density, expansibility, conductivity, and moisture of the lungs. To determine the nature of the process at work physical signs had to be correlated with morbid anatomy, another field of study now declining in importance. Dr Lakin agreed with Dr R A Young who had recently deplored the present tendency of the young physician to avoid post mortem work. The year 1761, he said, was notable for the publication of two books, the first being the five volume work of Morgagni then in his eightieth year, on the seats and causes of disease. The letters of which the book consisted gave accounts of the history, clinical condition, and post mortem findings of cases side by side. Dr Lakin read the account of a case of meningococci to illustrate the pleasant way in which the carefully observed facts were recorded. The book was the first real attempt to correlate post mortem findings with what had been observed in life, and marked not only the beginning of morbid anatomy, but the beginning of modern clinical medicine. Another book published in 1761 was a treatise in Latin on a new device for percussing the chest by Leopold Auenbrugger. The son of an innkeeper of Graz Auenbrugger applied to the human chest the principles of tapping on casks to determine their content. The published results of his seven years of observations on patients, checked in the post mortem room attracted little attention, although Stoll of

Vienna used the method. Corvisart, having read of it in Stoll's lectures, republished the book in 1808 with his own notes, and immediately percussion took its place as one of the most valuable clinical methods. Cullen (1784) was the first to write of percussion in England, but he never practised it. The reason for this neglect lay in the fact that the anatomical conception of disease had not crystallised. Physicians thought in terms of symptomatic nosology, similar symptoms of widely differing aetiology being grouped together. Corvisart extended the use of percussion to cardiac disease and aneurysm of the aorta, he first described the presystolic thrill of mitral stenosis. What the historians called the pathologico anatomical school of Paris, of which Corvisart was a distinguished member, was in reality a clinical school where the importance of correlating physical signs with morbid anatomy was recognised. Amongst the students attracted to Corvisart was Laennec, inventor of the stethoscope. Dr Lakin told the story of this discovery, based on the use of the transmission of sounds by solids in physical examination. Laennec's "*Traité de l'Auscultation Médiate*" (1818), filled with his own careful observations, was one of the greatest books in medicine. Another name to be remembered in this connexion was Joseph Skoda of Vienna. Trained in medicine, physics, and mathematics, he had applied the laws of sound to physical diagnosis, and had established physical signs on a logical basis with definite laws, to which faith could be pinned.

In the use of physical signs there were many difficulties, some, such as extreme scoliosis, being insuperable. It was possible to be much misled, but in only a small proportion of cases. In the vast majority physical signs could be relied on, and a method should not be discarded because it was difficult. The younger generation wanted results in a hurry without labour or sweat. It had to be remembered that radiologists had difficulty in interpreting radiograms, which often failed to elucidate difficulties. The logical basis of physical signs was that examination showed the physical condition of the organ examined. The next step was correlation with morbid anatomy. In a case with the signs of a cavity at the base of a lung, morbid anatomical experience showed that it would be unusual for a tuberculous cavity to appear at a base unless there was one higher up. Percussion gave information about lung density, solid lung giving a higher pitched note than spongy lung. A musical ear was necessary, especially as there was so little tone about percussion notes compared with those of musical instruments. A high pitched note resulted from solid lung or lung compressed by fluid. With fluid there was a greater feeling of resistance on the finger. Conductivity was tested by auscultation: the presence of bronchial or tubular breathing indicated solid lung, absent breath sounds that something intervened. Breath sounds arose in the larynx, solid lung conducting the sound better than spongy lung which gave vesicular sounds. Sometimes there was bronchial breathing over fluid, and in such anomalous cases the signs could be interpreted in the light of displacement of the apex beat. Expiration was prolonged when elasticity was lost as in emphysema. Cavernous breathing resulted from air passing over the opening of a cavity.

A great deal could be learned from the study of physical signs without X rays. Dr Lakin could not help wondering whether those who decried physical signs had ever got into the way of checking them. Perhaps they lacked a musical ear: perhaps they suffered from some defect of the organ of hearing.

SOCIETY OF MEDICAL OFFICERS OF HEALTH

At a meeting of the fever hospitals medical service group of this society on May 28th with Dr E H R HARRIS the president in the chair a paper on the

Heart in Diphtheria

was read by Dr H MASON LEETE (Hull City Hospital). Diphtheria, he said had been especially severe in Hull during the past six years and the numerous toxic cases gave opportunity for a study of the toxic myocardium. He had attempted to classify in a roughly quantitative manner the varying degrees of cardiac dysfunction. A clinical distinction was drawn between general toxic death in the first week of disease and cardiotoxic death in the second and third weeks. Changes in the relative intensities of the heart sounds could be recognised fairly constantly during the progress of a severe case together with extrasystoles and reduplications, and it was possible to place these phenomena in a scale which shows increasing or decreasing cardiac impairment. Proteinuria is an almost constant accompaniment in cardiotoxic cases.

Dr M. MITMAN (Eastern Hospital L.C.C.) said that Dr Mason Leete's clinical stages of diphtheria were substantially similar to his own. In the first week there was evidence of local lesions and general toxæmia, but electrocardiographic changes were rare. In the second week there was clinical and corresponding electrocardiographic evidence of cardiovascular damage in the more severe cases. Of the electrocardiographic signs the most common were changes in the form and voltage of the QRS complex changes in the direction of the T wave in significant leads and evidence of conductive lesions in the bundle and its branches. He believed that lengthening of the P-R interval was not common and that when damage to the main bundle occurred it produced a complete heart-block. Complete heart block sometimes occurred with a normal pulse rate. An indication of serious cardiovascular damage could be obtained not only from the quantity of albumin in the urine but also from the diminution in the quantity of urine passed. He believed that the cardiovascular phenomena in the paralytic stage as well as the paralysis themselves were of central nervous origin. He had inquired of physiologists if the cardiac irregularities and the tachycardia of this stage could be due to damage to the central nervous system and had been assured that they could.

Dr H S BANKS (Park Hospital L.C.C.) said that of the various factors concerned in the production of the heart lesion in diphtheria not the least important was the dosage and route of injection of the antitoxin. He noted that none of Dr Leete's cases had received more than 60 000 units of antitoxin some as little as 10 000 units divided between the intramuscular and the intravenous routes. The division of the dose in this way was in his opinion unnecessary and wasteful. The effective dose in toxic diphtheria was the intravenous dose and he advocated larger intravenous doses as a means of preventing or modifying the heart lesion. He knew the financial and mechanical difficulties involved in such a system of dosage but believed that it paid handsomely. He asked whether any member had followed up the late W. E. Dixon's work on the prevention of the heart lesion by preliminary administration of large doses of digitalis. He had not so far been able to determine what cases, if any were suitable for this method.

Dr E JAMES (Romford) expressed the view that gravis strains were not always responsible for a high case fatality. In a series of some 800 cases of diphtheria admitted to hospital from Dagenham Horn church, and Romford during the past 2½ years approximately 70 per cent. were classified as gravis and 20 per cent. as intermediate strains, yet the latter had been nearly twice as lethal as the gravis. What was the explanation?

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION

At a meeting of this society on May 28th with Mrs E C LEWIS the president, in the chair a paper on

Recent Advances in Obstetrics

was read by Miss KEREY PARKES. She said that in no branch of medicine did practice vary so much among reliable authorities as in obstetrics. New principles were very slow to be universally established and what was taught as an advance in one school might be condemned wholeheartedly in another. But during the last few years some important changes of outlook had been very general. For instance in the study of the toxæmia of pregnancy a subject always abounding in theories there was now an emphasis on the primarily metabolic nature of these disorders any actual toxins being considered as only the result of the disordered metabolism. In the treatment of minor degrees of disproportion in primigravidae the fashion for surgical induction during the last month had given way to the almost universal practice of trial labour at term with the lower segment Cesarean operation to follow if necessary. In general the overwhelming importance of the conduct of labour itself was gaining recognition now that the first enthusiasm for antenatal care had subsided. Even the most skilled and thorough antenatal treatment could not avoid all the dangers and difficulties to be dealt with during the course of labour. For purposes of discussion clinical obstetrics could be divided into the antenatal intranatal and postnatal periods.

ANTENATAL

Antenatal care could not be limited to the nine months of pregnancy since the woman's adjustment to this would depend on the state of her health and nutrition for years past. The province of the antenatal doctor thus covered almost the whole field of medicine. For early diagnosis the Aschheim Zondek and the Friedman tests had a high degree of accuracy and had other uses notably in diagnosing the intra-uterine death of a foetus the presence of a vesicular mole and the onset of chorion-epithelioma. A state of pregnancy having been diagnosed the next problem was to maintain it. In cases of repeated abortion extracts of corpus luteum were now given. Since this extract was unfortunately still very expensive an alternative method was to give large doses of a substance stimulating luteal activity which was found in the urine of pregnant women marketed as Antultrin or Progynon. Pregnancy being well established there were three main objects in antenatal work. (1) the avoidance of difficult labour due to malpresentation and disproportion (2) the avoidance and treatment of toxæmia, (3) the education of women in mothercraft and the hygiene of pregnancy. In each of these fields there had been some advance.

(1) By means of X rays in *pelvimetry* it was now possible to compare the actual diameters of the pelvis and of the foetal head. Unfortunately estimates based on these elaborate measurements were all static and failed to allow for the alterations in flexion and the moulding of the head which took place under the influence of uterine contractions, whose strength and efficacy were quite unpredictable. In cases of *breech presentation* external version was now undertaken slightly earlier than used to be the custom—from 32 to 34 weeks, instead of from 34 to 36. Where version failed and the legs were extended, it was no longer customary to bring down a leg when pelvic measurements were normal unless there was delay in the second stage. In cases of acute hydramnios where X rays revealed a normal foetus the tension of the liquor caused severe abdominal pain. It had been found possible to tap the amniotic sac through the abdominal and uterine walls, if necessary on several occasions, without disturbing the pregnancy.

(2) The *toxæmias of pregnancy* were now regarded as arising primarily from disturbed metabolism. The best protection against toxæmia was a good mixed diet, containing fresh foods, with plenty of iron, calcium, and vitamins, but it was still necessary to be constantly watching for early signs of toxæmia. Routine urine tests and blood pressure readings were now the rule, but in the estimation of oedema an interesting advance had been the recognition that much help could be obtained from regularly weighing patients, "occult oedema" being revealed by excessive gain in weight. It appeared from Dame Louise McIlroy's work that the normal gain was greatest from the 24th to the 28th week, being on an average 3 lb., while in toxic cases the maximum gain occurred rather later, from the 28th to the 32nd week, and was about 4½ lb. Miss Grace Jones had drawn attention to the state of the retinal arteries as an index of the condition of the arterioles elsewhere in the body, particularly in determining when the changes were such that permanent renal damage was likely to result. Any sign of retinal exudate or hæmorrhage was an indication for the immediate induction of labour.

(3) Great changes were going on in the *maternity and child welfare services*. The supply of domestic help was an aspect of domiciliary midwifery which did not, Miss Parkes thought, always receive the attention it deserved. A supply of reliable home helps under the supervision of the local authority, who would guarantee them an adequate wage, would go far to encourage women to be delivered at home.

INTRANATAL

As to the intranatal period, the general trend was to minimise interference of every kind, and to realise that the passage of the head through the pelvis was a dynamic problem—i.e., the uterine forces were quite as important as the relative sizes of passage and passenger. A few years ago the induction of premature labour was very popular for cases where disproportion was feared at term, but now induction had no place in the treatment of primigravids with suspected disproportion. Doubtful cases of disproportion should all be submitted to a trial labour at term. If after some hours of good pains and rupture of the membranes the head was not satisfactorily in the pelvis, Cæsarean section must be performed. The lower segment operation could safely be undertaken much later in labour than the classical operation. The routine use of anaesthetics in labour was becoming more general, and for the normal delivery self administration of gas and air was considered

best in combining safety and efficiency. Anaesthetics were important as a possible factor in the production of the condition known as "obstetric shock," a sudden and alarming collapse. The most effective treatment appeared to be intravenous saline, with stimulants such as Coramine or Icoral, and warmth. One complication of labour which had received more attention lately was the contraction ring, which occurred in otherwise perfectly normal cases, causing prolonged delay, and ultimately obstructed labour. It might arise at any stage of labour. When this was diagnosed early in the first stage the treatment was lower segment Cæsarean section. Later, when infection had occurred and the child was dead, morphia, deep anaesthesia, and constant traction by weights attached to the perforated head were the only methods available to relax the ring. Should the contraction occur only in the second stage, delivery might be accomplished by forceps under deep anaesthesia, and with amyl nitrite. In the third stage, when fortunately the complication was rare, treatment was by manual removal of the placenta after dilatation of the ring—a very difficult procedure. In the intranatal period the baby also had to be considered. The resuscitation of the shocked or asphyxiated baby by lobeline had recently been recommended.

POSTNATAL

Finally, speaking of advances in the puerperal period, Miss Parkes referred to prophylaxis against sepsis, the importance of droplet infection, of septic foci in the patient herself, and of conditions such as tonsillitis or ear discharges in other members of the family, when the mother was being delivered in her own, often overcrowded home. Hæmolytic streptococci were now known to be the important organisms, but had been differentiated into twenty-two different types, varying in virulence, the eleventh being the worse. Prontosil Album (*p* aminobenzene-sulphonamide) seemed to be an effective drug against hæmolytic streptococci, and its use provided an enormous advance in treatment. A complication which might arise during treatment with this drug was sulphæmoglobinæmia, which was manifested by cyanosis, especially of the lips, without any cardiac or respiratory distress. The condition appeared to be harmless as long as prontosil was stopped as soon as the cyanosis was noticed. Epsom salts should not be given to patients on prontosil, nor, in fact, any drastic purgative, for even those not containing sulphur increased the sulphides in the bowel by their irritating action. Another drug fostered by Queen Charlotte's was the widely used antiseptic Dettol.

An electrically driven breast pump was a fairly recent innovation, and increasing interest was being shown in the reconditioning of weakened abdominal and pelvic muscles by massage and exercises. More practical advice was being given to women about the proper spacing of their pregnancies, and patients with heart or kidney disease were given careful instruction in birth control rather than a vague statement that they must not have any more babies. The available clinics giving advice on contraception were still woefully overworked and overcrowded, and there were large areas without any, but the need for them was being recognised, and their numbers were increasing. Miss Parkes illustrated her address with some Kodak films of a type of lower segment Cæsarean operation, of difficult cases of breast feeding, and of a case of pseudo pregnancy, showing the disappearance of the phantom tumour under anaesthesia.

REVIEWS AND NOTICES OF BOOKS

Diseases of the Eye

A Text Book for Students and Practitioners By
EUGENE WOLFF M.B. B.S. Lond. F.R.C.S. Eng.
Ophthalmic Surgeon Royal Northern Hospital
Assistant Surgeon Royal Westminster Ophthalmic
Hospital, London Cassell and Co 1937
Pp 234. 15s

It is not easy to write a short text book on any branch of medicine or surgery. One of the main disadvantages of compression is the elimination of discussion of controversial points for the dogmatic statements which replace them do not always accord with clinical experience or current hypothesis. On the whole Mr Wolff has shown judgment in his choice of subject matter and has wisely abstained from confusing his argument by the inclusion of rare conditions and variations. To those who find diagnosis of the normal more difficult than that of disease the well written chapter on the fundus is commended. The author has wisely refrained from condensing this important section. The section on squint, both paralytic and non paralytic is clearly written. Though only one page is allotted to the treatment of concomitant squint this is set out adequately and without bias.

We hope that in the next edition of the book more attention will be given to the field where ophthalmology overlaps general medicine. These sections fall below the standard of the remainder of the book notably in the chapter on diseases of the retina. The pages dealing with the retinal manifestations of vascular and renal disease lack precision and are out of touch with modern ideas. There is no reference to the important changes seen in the fundus in malignant hypertension. The section devoted to detachment of the retina could be enlarged with advantage to the general practitioner. The book is easy to read though the use of italics to emphasise a phrase or word in the middle of a sentence is excessive and distracts attention from the argument. The work as a whole owes much of its value to the excellence of its illustrations. The anatomical drawings and those which show the position of the two eyes in relation to one another are far in advance of those usually found in text books.

Surgical Pathology of the Thyroid Gland

By ARTHUR E. HERTZLER M.D. Surgeon to the
Agnes Hertzler Memorial Hospital, Halstead
Kansas and Professor of Surgery, University of
Kansas, London: J. B. Lippincott Co 1937
Pp 208. 21s

There seems round which this book is written is mentioned in the preface. If removing a part of a diseased gland is beneficial to the patient what is more logical than to assume that removing the whole will be better? The author suggests that all goitrous patients die a cardiac death even when the goitre is of the so called non toxic varieties and thus total thyroidectomy is the only logical treatment for a gland which is producing such a damaging secretion. He thrusts forward his views with an enthusiasm which is infectious making the reader wonder why he has ever committed the crime of partial thyroidectomy. On second thoughts however the lack of evidence is found in many places to detract from the value of the arguments. No figures are given in support of Prof Hertzler's belief either that patients with non toxic goitre die

a premature death or that total thyroidectomy is so rarely followed by symptoms of hypothyroidism. These views, which the author reiterates throughout the work, must not be allowed to supersede those held by the more orthodox. Prof. Hertzler adopts the classification of the American Society for the Study of Goiter dealing fully with the naked-eye and microscopic changes in each type. Each chapter is profusely illustrated by excellent microphotographs and concludes with a brief review of the literature. It is disappointing that nothing is said about the etiology of goitre in the chapter on general pathology. Very little space is devoted to chronic thyroiditis and carcinoma of the gland. The book is of very little value as a work of reference, but it makes pleasant and light reading and is excellently illustrated.

Buchanan's Manual of Anatomy including Embryology

Sixth edition By J. E. FRAZER D.Sc. F.R.C.S.
Professor of Anatomy, University of London
London: Baillière Tindall and Cox 1937
Pp 1772. 35s

The distinguished anatomist responsible for the new edition of Buchanan's Anatomy has assured to this notable text book a great future. He has combined the advantages of studying the body by regions with the systematic consideration of osteology, neurology and embryology and both cytology and microscopic anatomy are presented adequately. To accomplish all this nearly 1700 pages of text and 1042 illustrations have been required. A glossary of special anatomical terms and a serviceable index are additional attractions. Prof. Frazer has adopted the present English system of terminology which preserves some valuable traditional usages, is close enough to the International Latinised form to make it possible to pass easily from one to the other and is handy and simple.

Many of those charged with the care of medical education are concerned about the immense volume of information nowadays presented to the student. It is felt that few if any can assimilate and reproduce it all that the attempt to do so entails individual reflection, and that in this technical flood education and training have been overwhelmed. Though there are just grounds for apprehension things are not really so bad as this. Indeed amidst the gloomy forebodings of our time it is some comfort to dwell on the great advance in the education of the engineers of medical students to learn and the success with which they meet the demands made upon them. This text book of anatomy will be judged then by a standard which is concerned not with the volume of facts but rather with their wise selection the manner of their presentation and the interest and pleasure with which they are received. Judged by this standard this book should continue to increase in popularity with students. It is not proposed here to consider its features in detail some of them are regrettable—e.g. the omission presumably deliberate of radiology and—a small point—the relation illustrated of the artery striata to the posterior calcareine suture is unusual; but the embryology demands special mention. This is Prof. Frazer's special field. His numerous published researches are regarded highly by other embryologists and he has published a book on this

subject which contains the outcome of many years of fine work. In this text book of anatomy he has assembled and illustrated the processes of growth and differentiation, and his mastery of the subject makes this section a notable contribution.

Surgical Anatomy

Third edition By GRANT MASSIE, M B, M S Lond, F R C S Eng, Assistant Surgeon, Guy's Hospital, Lecturer in Operative Surgery, Guy's Hospital Medical School London J and A Churchill 1937 18s

WHY there should be a demand for books on surgical anatomy is one of the mysteries of medical education. The student who has spent at least eighteen months learning anatomy must have acquired the sort of familiarity with some book on anatomy which materially facilitates revision, while a practising surgeon nearly always finds, if he wants to refresh his knowledge of the anatomy of some operation, that for the detailed information he requires he has to consult an ordinary anatomical text book. It is clear, however, that a large number of students feel the need for a treatise on surgical anatomy and their need is here met in a very efficient way. The information is given in an attractive form, so that the reader's interest is likely to be maintained. There are very few omissions but there does not seem to be a description of an approach to the back of the knee joint nor of the anterior operation for excision of the stellate ganglion. The illustrations are good, many of them having been borrowed from reliable sources, and the diagrams clear

American Pharmaceutical Association Year Book

1934 Vol. XXIII Washington, D C American Pharmaceutical Association Pp 467

THOUGH published in 1936 this book reviews publications during the year 1934. Brief extracts of papers from over 80 journals are given and are classified under the main headings of pharmacy, materia medica, and chemistry. There is much of interest to the physician since many of the abstracts deal with therapeutics, and excellent author and subject indexes are provided. The volume contains many details of proprietary remedies which when collected from the international literature form an imposing array. A list of hormone preparations is given (p 87) and one can hardly help wondering if the ingenuity which is devoted to devising different names for the same substance might not be better employed.

How Animals Behave

By H G WELLS, JULIAN HUXLEY, and G P WELLS London Cassell and Co 1937 Pp 263 4s

THIS is a revised version of some sections of the "Science of Life" which the same authors published in one large volume some while ago. It is very cheap, in excellent format for convenient reading, and gives a most readable and interesting account of the behaviour of animals from protozoa to the apes, man's conduct is dealt with in another volume of the series. Apart from the exceptional clarity of the writing the book is easy to follow because it is a coherent tale of the evolution of behaviour and not a collection of curious anecdotes. The argument is that lower animals can learn by trial and error,

to which is later added heritable instinct which is more highly developed in, e.g., insects than in man, that constructive intelligence is found only in the apes and that generalised and abstract thought is the prerogative of man alone. It is unlikely that everyone will agree with this general outlook. Insects and birds do things which are very nearly intelligent. And if it is easy to make a bird look a fool by interfering with a natural train of instinctive reactions, it is equally possible that the right kind of poltergeist might have little difficulty in demonstrating the silliness of man. But we recommend those who are interested to read the book and with it, to get a rather different point of view, E S Russell's "Animal Behaviour" they can then form their own opinions.

Experimental Physiology

By GEORGE H BELL, M B, B Sc, Murrhead Lecturer in Physiology, University of Glasgow Glasgow John Smith and Son 1937 Pp 70 4s 6d

NEARLY all books giving instructions for practical exercises in physiology provide a description of the class exercises carried out and the advice given to students in a particular laboratory. This one contains nothing strikingly original, but tips on how to make class experiments work satisfactorily are always valuable to teachers. The experiments described here are on the frog and human subject, illustrations of typical results accompany many of them, and the alternate pages are blank for students' notes. The style is intimate and direct, but, as is inevitable, the equipment of the Glasgow laboratory is taken for granted. The book should be of great value to students of this school, but among others its circulation is likely to be limited.

Sex in Religion

By G SIMPSON MARR, M A, M B, Ch B, B.D., D Litt London George Allen and Unwin Pp 285 7s 6d

Dr Marr writes from the standpoint of a medical man who is also a churchman. That a balanced sex life is an important factor in health he shows in a series of historical chapters. These deal with primitive religions, the Old Testament, Egypt, Greece and Rome, the early and medieval church, the Reformation and modern times. His thesis is that though the Church has, up till now, adopted an ostrich like attitude to the problems of sex, it need not continue to do so. Dr Marr recommends that the churches of England and Scotland, working together should set up a commission to investigate what part they could play in imparting to children a proper knowledge of sex problems, in guiding adolescents through the most critical period of their lives, and in recognising the diverse factors which make for happy marriage.

The book is agreeably written and well documented—there is an appendix containing a list of 300 books which have been consulted. It says little that is new, some of the author's deductions, moreover, are of questionable validity—as for instance, that the increased use of contraceptives would go far to solve our unemployment problem. But though, to the medical reader Dr Marr may seem to be pushing an already widely open door, it must not be forgotten that clerical opinion on problems of sex is sometimes less realistic than medical, and tends to lag behind it.

THE LANCET

LONDON SATURDAY JUNE 19 1937

SECOND BEST CARE OF THE EYES

THE Northern Counties Association for the Blind has issued a warning against the indiscriminate sale of spectacles. The Association is not so far as we are aware dominated by registered medical practitioners. Its advice may therefore be listened to by the general public without any fear that it is an insidious attempt to bolster up a monopoly of professional practice. The Association expresses doubts of the wisdom of allowing a patient to select for himself a pair of spectacles from a tray on a street stall or in a multiple shop. The spectacles thus sold may be cheap and the properly prescribed spectacles obtained from an optician may be dear, but any reasonable or even generous expenditure on the care of the eyes and the preservation of the sight is justified. Local authorities have power under Section 66 of the Public Health Act of 1925 (to be replaced next October by Section 176 of the new Act of 1936) to make any desirable arrangements for assisting in the prevention of blindness and for treating local residents who suffer from disease or injury of the eyes. The Northern Counties Association suggests that this statutory power might well be exercised so as to enable the poorer members of the community to have the best appliances. What has evidently impressed the Association is the twofold danger that inexperienced selection from a tray may fail to correct defective vision and lead to the neglect of the disease underlying the defect. The insidious onset of chronic glaucoma for instance needs considerable skill to diagnose. Failure to secure skilled examination of the patient's eyes may mean that a fair chance of preventing blindness is thrown away. Voluntary agencies are doing what they can. In addition to the clinics and the free services of specialists in the great hospitals the National Ophthalmic Treatment Board enables anyone with an annual income of less than £250 to obtain examination of the eyes and the prescription of glasses by recognised ophthalmic medical practitioners at a much reduced fee. If the fee is still out of reach of the poor patient the local authority might make use of its power under Section 66. Blindness has become a special concern of the community. It is a false economy that leaves the layman to be his own expert. No one wants to overstate the danger. It is on record however that the departmental committee on the Optical Practitioners Bill of 1927 reported itself satisfied that the number of cases in which the patient might miss the opportunity of remedial treatment if the patient were not examined by an oculist was by no means negligible.

Just at this moment as it happens, the National Health Insurance Joint Committee has issued some amendments of the Additional Benefit Regulations of 1930 in relation to ophthalmic treatment and optical appliances. There is to be a new committee representing the approved societies and the opticians, to administer ophthalmic benefit. After next September an approved society may adopt a scale of charges drawn up by this committee for the provision of optical appliances of a defined standard, and in particular for allowing as a separate item 'any charge for services rendered by an optician whether an optical appliance is supplied or not.' Article 25 of the 1930 regulations defined the provision of optical appliances as including any service rendered by an optician incidental to the provision of the appliance. The recent amendment seems to contemplate that the optician shall perform the ophthalmic examination which in the 1930 regulations meant 'an examination of the eyes by a medical practitioner having special experience of ophthalmic work.' If by its new regulations the Ministry of Health is giving official recognition to a form of unqualified medical practice, it is a curiously unobtrusive method of reversing the conclusions of one Royal Commission and two departmental committees. The latest annual report of the National Ophthalmic Treatment Board dealt faithfully with those apologists for the sight-testing optician who claim that when glaucoma is present he 'may be considered absolutely capable in detecting the condition and thus safe from the public point of view. However admirable the education of opticians their work has been the correction of errors of refraction. Their curriculum is not designed to equip them with the knowledge of physiology and pathology needed to detect the beginnings of disease.'

The Minister of Health, in notifying the issue of the amending regulations announces that they were framed after consultation with members of the medical profession. It would be interesting to learn what those representatives told the Ministry and how far the Ministry paid attention. Are those whose sight is defective going to get the best service? In a recent letter to the *Times* Dr G. C. ANDERSON justifiably criticised the Ministry for encouraging the patient to seek what is admittedly the second best. Sir KINGSLEY WOOD is himself satisfied that the ultimate ideal is for all persons to go to medical eye specialists and his plea that the number of these is insufficient has been denied by Sir JOHN PARSONS. The new regulations seem to deserve longer consideration than they have received. Issued by a procedure based on the sometimes overworked allegation of departmental urgency they are technically Provisional Regulations. This should mean that, so far as England and Wales are concerned though the regulations take effect forthwith there will be an opportunity for any public body to object to them before they finally are published as Statutory Rules. The opportunity should not be neglected.

FRACTURE CLINICS

IN a number of hospitals throughout the country a special department has now been set up for the treatment of fractures and the practice is extending. The public health authorities are beginning to recognise the importance of these clinics and to be interested in their organisation as a matter of public benefit and public economy. For this reason, as we noted last week, the committee appointed last year by the Ministry of Health to inquire into the rehabilitation of persons injured by accidents has thought well to issue an interim report¹. The committee is anxious to ensure that the organisation of fracture clinics shall proceed along the right lines, so that individual clinics shall be efficient and established with due regard to local needs, while overlap is avoided. The report therefore deals with (1) the type of treatment and plan of clinic that should give the best results, and (2) the distribution of fracture services so as to put them in reach of all patients in towns and rural districts. The committee bases its scheme on the assumption that the clinics will be established at and as an integral part of existing hospitals. The principle is that all fracture cases shall be concentrated in one department and under a single control to ensure continuity of treatment and supervision of all stages of recovery right up to the re-establishment of full working capacity.

The type of fracture clinic planned by the committee has at its head a surgeon who is paid for his services. The prime responsibility is his and he is expected to devote a considerable proportion of his time to the work. The remuneration suggested is £500 for a surgeon-in-charge at a hospital of 500 to 1000 beds dealing with 2000 to 2500 fractures in the year, £300 where the hospital has 200 to 500 beds, with a proportionately smaller number of fracture cases. In the small hospitals, of 50 to 200 beds, the salary is proportionately reduced. For all the larger hospitals the scheme provides for one or two full-time assistants, who are senior members of the resident staff, for the services of a resident radiographer, and for clerical assistance. The efficient keeping of records is an essential part of the work. The services of two resident house surgeons, already on the staff of the hospital, are called on as required. For the small hospitals, the appointment of full-time assistants may not be justified, but arrangements would be made to secure the part-time service of the existing staff. It will be seen that this scheme departs in one main particular from the ordinary policy of voluntary hospitals in that it involves the payment for services of a member of the visiting staff. The committee points out that the time and service that will be required from the surgeon and the fact that knowledge of fracture treatment is of small financial advantage in private practice means that, without payment, hospitals cannot expect to secure the man best

qualified for the work. One paragraph of the report suggests the possibility of fracture clinics becoming part of a general accident service which would no doubt include the supervision of all extensive injuries of the soft parts and ensure the skilled treatment of tendon injuries. Under the purview of such a service would naturally come the equipment and training of the ambulance corps. In the future the accident work of hospitals is likely to be divided off more sharply from the treatment of sickness, from which it differs profoundly. It is not good for a patient with a fractured leg or arm to be treated side by side with ill patients, whether in wards or in out-patient clinics. He is not ill, and what he needs is healthy competition in recovery with other patients like himself. Malingering is rare in a fracture clinic.

The report cites four criteria of correct reduction of fractures: (1) the limb must be the right length, (2) the bone must be in correct line, (3) there must be no rotation or twisting, (4) joint surfaces must be correctly restored. Fixation by plaster of-Paris applied next to the skin is the general method advised. Traction is mentioned as the method of choice for fractured femurs. The importance of early use is emphasised as the basis of the modern treatment of fractures. In the planning of the routine work of the clinic arrangements are made for immediate treatment of casualties, for a session at which every case can be seen daily for the first few days, and for a weekly session at which attendance is arranged of all out-patient cases of fracture under treatment, all former in-patient cases of fracture, and cases reporting at varying intervals for follow up purposes. This clinic is conducted by the surgeon in charge. It is strongly recommended that special wards be provided for fracture cases which require admission, and that they shall be placed under the care of the surgeon in charge of the clinic. Special arrangements may be made for fractures of the pelvis and for head injuries, and also for cases in which the fracture is a complication of an abdominal injury. That the equipment of the department need not be very expensive was shown by the report we recently published² of the municipal accident service at Cardiff. The covering letter sent with the report to the county councils and county borough councils expresses the hope that if these bodies are intending to establish clinics for themselves they will refer to the detailed scheme given in the appendix. Evidently the Ministry of Health expects local authorities to shoulder the responsibility for the efficient treatment of accidents. Suggestions are made for the treatment of patients in outlying districts by cooperation between small cottage hospitals and larger centres. The establishment of accident services is in many cases held up by lack of money. Last October a conference on the treatment of accidents was held in Manchester by the General Federation of Trade Unions. Employers' organisations are also showing interest in the efficient treatment of their workers. Could these bodies

¹ Interim Report of the Inter Departmental Committee on the Rehabilitation of Persons Injured by Accidents. H.M. Stationery Office. Pp. 20. 4d.

² *Lancet*, Jan. 9th, 1937, p. 107.

not induce the great insurance companies to contribute? It is they who stand to gain most by the quick and complete recovery of the injured person. The numbers concerned are large. At 825 hospitals (724 voluntary and 101 municipal) which replied to the committee's inquiries nearly 202,000 new fracture cases were treated in the year 1935.

SUPERANNUATION IN THE LOCAL GOVERNMENT SERVICE

THE fact that local authorities are not obliged to make provision for their retired employees though most of them including the more important ones have made such provision has long been a matter of discontent. The Local Government and Other Officers Superannuation Act 1922 has been adopted according to Sir KINGSLEY WOOD by nearly 950 local authorities and some 25 have Local Act schemes but 587 authorities have made no arrangements for superannuation. It is not only to protect the employees of the last group but to encourage free migration throughout the country in a service where varied experience is of high value to senior administrative officers that an extension of superannuation provision is urgently needed. Hitherto, again even those local authorities which have made such provision have been free to decide which of the posts in their service are designated as established and only the employees occupying established posts are superannuable. A Bill now introduced¹ is designed to ensure this privilege for all whole time officers as regards part-time officers and servants there is no compulsion their inclusion in the scheme being left to the discretion of the authority. The normal age of retirement will remain at 65 except for female nurses midwives and health visitors who will retire at 60 or if they wish at 55 provided they have then completed 30 years of service. This permissive clause brings the scheme to some extent into line with the Federated Superannuation Scheme for Nurses and Hospital Officers adopted by most of the voluntary hospitals of the country which makes 55 the age of retirement but a more fundamental difference unfortunately remains which will complicate any attempt in the future to follow up the co-ordination of the superannuation practice of local authorities by linking it with that of the voluntary institutions. The difference is that whereas under the Federated Superannuation Scheme the employer pays annually double the contribution of the employee (10 per cent. and 5 per cent. respectively) the local authority pay only the same proportion of the remuneration as do their officers and servants. Hitherto this has been 5 per cent. but the Bill proposes that in view of the change in interest rates since 1922 when Parliament last dealt with the matter the contribution in respect of officers shall in the future be 6 per cent. from either party. The Bill in its present form offers only one small concession to those officers who may wish to seek experience in

institutions other than those under local authorities 12 months is substituted for 6 as the period constituting a disqualifying break of service. Migration between the services of all local authorities throughout the country, however which was formerly liable to be penalised by loss or grave diminution of superannuation prospects will involve no handicap if this Bill becomes law. Reciprocal arrangements are now for the first time introduced between authorities such as the London County Council which have local Acts and not only between those which have adopted the Act of 1922 and this applies to transfer values as well as to the reckoning of previous service. A criticism made of the Bill at its second reading concerned the fact that the inclusion of servants in the superannuation scheme remains optional and Captain ELISTON expressed disappointment that no provision was made in the Bill for the optional addition of a number of years not exceeding ten to those which professional officers had actively served. His plea for special consideration of the position of medical officers in view of the late entry into the service due to long undergraduate and post-graduate training was a cogent one. The debate recorded on another page was clearly only the first skirmishing round on a complicated issue.² The relief that legislation has at last been introduced on the lines recommended by the departmental committee under Sir ARTHUR SELBY BAKER as long ago as 1928 will not prevent a careful scrutiny of the provisions of a Bill which will affect an increasing number of medical officers nurses midwives health visitors and other employees as the service of local authorities expands.

ANTIBODIES AGAINST HORMONES

A NEW and fertile field of research was thrown open when COLLIP and ANDERSON proved that animals can develop resistance to hormones administered to them over long periods.³ It has been established that the thyrotropic and gonadotropic hormones of the pituitary evoke such a resistance and it is reported that the growth and ketogenic factors of the pituitary also do so. Clinically this observation is important first because it may explain why patients become refractory to further treatment and, secondly because an antagonistic substance produced in animals might be used to relieve disorders caused by excess of hormone. That such a substance can exist is shown by the fact that the serum of resistant animals will inhibit the action of the hormone in other animals whether this hormone is secreted by the animal or injected by the investigator.

The hormones known to call forth this resistance to themselves are protein like bodies and it has been suggested that like many proteins they act as antigens provoking an immunity due to the formation of antibodies. Clearly there is an analogy at least between the well known mechanism

¹ Bill 141. H. M. Stationery Office. 1s.

² A memorandum (Cmd. 442) explaining the Bill has been issued and can be obtained from H. M. Stationery Office. 2d.
Collip J. D., and Anderson L. St. *Lancet* 1934 i 74, 761.

of acquiring immunity to proteins and the formation of protective substances against hormones, and it is credibly reported that the intensity of precipitin reactions and complement-fixation reactions run parallel to the protective properties of the sera in the animal. One difficulty has been to distinguish between reactions due to hormones and those due merely to specific proteins. It has, however, been shown that if antiserum to ox pituitary is precipitated with ox serum, the supernatant liquid contains protective factors against ox pituitary, and this rules out the possibility of the antigenicity being bound up with the specific proteins. On the other hand, there is no known mechanism of auto immunisation by which an animal becomes immune to its own pituitary, the hormone, to produce an antiserum, must come from a different species. This implies generally, in the present state of pituitary hormone chemistry, that it must contain heterologous protein, but it would appear that a greater zoological difference between the species from which the extract is made and the species which receives the injections is necessary for the formation of antisera to hormones than for the formation of antisera to serum proteins. The activity of hormone antisera against hormones is, again, subject to species- and source specificity, for antiserum to gonadotropic hormone from pregnant-mare serum is only partially effective against other forms of gonadotropic hormone, and antiserum to extract of human pregnancy urine is not effective against ordinary pituitary extracts, whilst antiserum to ox pituitary is only partially effective against extract of human pregnancy urine. The immunological phenomena are consistent with the existence of gonadotropic hormones that differ in each species of animal but have less intricate and distinctive patterns, and structures less differentiated from species to species, than the serum proteins. Alternatively, the same gonadotropic hormones may serve a group of related species. The hormonal activity may be conceived as due to a prosthetic group common to all species, but so far it has not proved possible to separate a simple active compound containing such a group, in the way that thyroxine has been separated from thyroglobulins. The determinant groups responsible for serological reactions must, however, be independent of the hormonal prosthetic group, for antisera to gonadotropic hormone may be prepared with extracts of pregnancy urine whose potency has been lost after storage, or even from a fraction from normal male urine having negligible hormone activity. Logical as the scheme may seem, it may not be the whole story, and various considerations remain to be taken into account, especially in the case of the thyrotropic hormone. Dr A. LOESER, whose work carries great weight, dealt with some of these in the discussion reported on p. 1462. His most striking discovery is that antithyrotropic activity is present in normal sheep's serum, and it is claimed that this activity can be concentrated into a particular fraction. Confirmation of these results would lead to modification of the straightforward immunological concept according to which an animal

does not form antibodies to its own protein like hormone.

Another provocative contribution to these problems is made by Prof JULIUS BAUER and his collaborators in Vienna,⁴ who find that injection of thyroxine into rabbits produces a resistant state, as judged by the disappearance of the fall in serum-lipase and of the loss in weight which are regarded as typical thyroxine effects. When this resistant state is reached, the serum shows a positive complement-fixation reaction if thyroxine is used as antigen. Normal rabbit serum does not give this reaction. When the sera of human patients are examined, it is found that this complement-fixation reaction with thyroxine is given by a large proportion of those with hyperthyroidism whereas the sera of those with other diseases are usually negative. Operation on hyperthyroid patients followed by cure is accompanied by a disappearance of the thyroxine complement-fixation reaction. These observations are potentially of great clinical importance and of theoretical interest in that they suggest that resistance to thyroxine is bound up in some way with a mechanism that is on the borderline of recognised immunological reactions. A full immunological effect thus cannot be, for the sera of thyroxine-resistant rabbits does not confer resistance on normal animals. This work has been extended to the demonstration that not only thyroxine but also diiodotyrosine, adrenaline, sympatol, insulin, tyrosine, and phenol can act as antigens, the suggestion being that the phenol group is the centre of a group of more or less unspecific serological reactions. More definite conceptions of these reactions must await further study. The complement-fixation reaction itself is little understood, and both immunology and endocrinology stand to gain from closer examination of these resistance phenomena.

THE MODERN MENTAL HOSPITAL

IN opening the new Runwell Mental Hospital (briefly described on p. 1487) Sir Kingsley Wood, the Minister of Health said that the national outlook towards mental disease had in recent years completely changed, and in no branch of public health services had there been such striking improvements in methods of treatment. The provision in the Mental Treatment Act of 1930 whereby voluntary patients could be admitted to public mental hospitals, had already had remarkable results. Of the 25,000 patients admitted to such hospitals last year nearly 27 per cent were received on a voluntary footing. He did not think there was proof that the incidence of mental disorders in this country was rising. Nevertheless the problem was a considerable one and there were some 150,000 persons in this country at present under care by virtue of the Acts providing for Mental Treatment, whilst there were of course many more who suffered from mental instability and nervous disorders. Probably something like a third of all sickness apparently physical, was in fact nervous in origin. He was glad to say that increasing numbers were voluntarily seeking treatment in the early stages of the disease and while they were still able to coöperate with the doctors.

⁴ Bauer J. Kunewälder E. and Schächter F. *Wien Klin Wschr* 1936, 49, 399. 1937, 50, 83. Bauer J. and Kunewälder E. *Wien Klin Wschr* 1937, 50, No. 12.

ANNOTATIONS

STATISTICAL TACT

THIS week we publish in the form of a slender book¹ of under 200 pages Dr Bradford Hill's pithy articles on the application of statistical principles to medical investigations. Those who followed these articles in the pages of THE LANCET in the early months of this year will find in the book some useful practical additions—notably a set of simple definitions of commonly used statistical terms and standard errors—a note of the precise meaning of certain expressions sometimes loosely used and the conventions which are usually followed in expressing certain rates—e.g. maternal mortality rate, attack or incidence-rate fertility rate. There is included also by permission of Prof R A Fisher F.R.S. and Messrs. Oliver and Boyd a table constructed by him which is particularly useful for testing the presence or absence of association between characteristics which like so many characteristics in medical work, cannot be quantitatively expressed.

Dr Bradford Hill in his preface repudiates with some warmth any suggestion that the statistician is a cold blooded organism who enjoys either refuting other workers' conclusions or explaining that though these may well be true valid evidence of their truth is sadly lacking. He does not fancy himself in the rôle either of the armchair critic or of the confirmed sceptic, and he resents being forced into the ungracious position of having to turn down as inconclusive another man's sincere and serious work. The proper solution is for the worker in medical problems clinical as well as preventive himself to learn something of statistical technique both in experimental arrangement and in the interpretation of figures. Dr Bradford Hill has shown that contrary to the general idea no special mathematical ability is needed to grasp and apply elementary statistical principles and he has certainly illustrated precept by example. These examples make it clear that it is not only the senior worker surveying case notes collected over a long period with a view to extracting their statistical message who will find here the help he needs. Whoever is writing an article preparing a university thesis planning a series of experiments, contemplating the issue of a questionnaire or concerned with deductions from samples typical (he hopes) of a larger population will gain from its study and most of all perhaps the doctor anxious to use the opportunities of general practice to solve some clinical or epidemiological problem.

The main lessons the book teaches is that it is before an investigation is started rather than after it is completed that the principles underlying the collecting and interpreting of numerical evidence should be grasped and that far from being a trivial and time-wasting ingenuity the application of the numerical method to the subject matter of medicine is an important stage in its development.

THE DRUG TRAFFIC IN EGYPT

THE report of the Narcotics Intelligence Bureau² to the Egyptian Government for 1936 if less dramatic than the seven previous annual reports yet affords

invaluable evidence of successful vigilance in dealing with illicit traffic in noxious drugs. T W Russell Pasha, the active director of the Bureau claims that Egypt has for years had more drastic legislation against illicit traffic than such as is provided for by the last convention on the subject drawn up at Geneva. While the general situation in Egypt is now said to be fair to medium it is claimed that a vast improvement has been effected since 1930 and the number of convicted traffickers and convicted addicts continues to fall. Indeed under the post treaty régime the possibility of an almost drugless Egypt is foreseen by the indefatigable Pasha. Internationally however the picture is not so reassuring. The situation at Suez is disturbing. It is reported that the majority of the Manchukuo heroin destined for America is now being routed from the Far East ports through the Suez Canal. Commerce in opium and heroin in Manchukuo appears to be entirely uncontrolled. The world source of illicit white drugs to day is China north of the wall and for some distance south of it. These areas are either under direct or indirect Japanese control. The chief market for this Chinese heroin is said to be America, no longer via the Pacific to Western ports, but through the Suez Canal to European ports for trans-shipment to New York. According to Russell

Ships personnel and passengers can buy a kilo of heroin in Tientsin for 6000 francs at Suez and Port Said they can find ready purchasers at 12 000 francs for the kilo who will dispose of their goods eventually with a very big profit to themselves.

The report concludes by urging the closest possible co-operation with Great Britain and the United States so that the good work done by the League of Nations shall not be undone and the world re-poisoned solely and entirely for the monetary profit of a mob of international rascals living under the protection of the political chaos of the Far East."

SECOND INTERNATIONAL CONGRESS FOR MICROBIOLOGY

So many and so diverse were the subjects under discussion at the meeting of the International Congress for Microbiology held in London during July of last year³ that even the final issue of the papers could only be given in the form of abstracts. The report of the congress has now reached us in book form⁴ under the editorship of Dr R St John Brooks the honorary general secretary of the congress. Microbiologists throughout the world will find the volume full of interest and instruction as much of the work was chosen for presentation on the grounds that a clear international understanding of it was desirable. The discussions range through all the branches of parasitological and economic microbiology but no doubt as with all really live meetings the most important part of the transactions were in the personal conversation and demonstrations which took place during the congress. Among the questions of medical interest discussed were filtrable viruses, malaria, the diagnosis of enteric fevers, the prophylaxis of diphtheria and whooping-cough and the serum treatment of diphtheria, staphylococcal pneumonia and meningococcal infections, enteric fever and so forth. The communications on the practical

¹ Principles of Medical Statistics. By A. Bradford Hill. M.D., Reader in Epidemiology and Vital Statistics in the University of London (London School of Hygiene and Tropical Medicine). Fellow and Member of Council of the Royal Statistical Society. London: The Lancet Ltd. 1937. Pp. 192. 6s.

² Egyptian Government, Central Narcotics Intelligence Bureau. Annual report for the year 1936. Govt. Press, Kulliyah, Cairo, 1937.

³ Lancet 1936 2, 276 and 331.
⁴ Second International Congress for Microbiology. London 1936. Report of Proceedings. Edited for the executive committee by Dr R. St. John Brooks (honorary general secretary). London, 1937. pp. 679.

subjects give a good idea of present methods and tendencies in immunological forms of treatment. Prontosil and its congeners in the treatment of streptococcal infection came under review. Other sections covered microbiology in relationship to dairying and water supplies, ensilage production, the destruction and preservation of timber, problems of the fermentation and canning industries also received attention. From such a wide selection it is almost invidious to select any special subject as of outstanding interest, but in the account of advances in virus study one reads with something of a shock the announcement of Prof. A. R. Dochez that he and his colleagues have kept the viruses of influenza and common cold alive and infectious for as long as a year in chick embryo medium. The novelty has not yet worn off the experience of watching filtrable viruses emerge from being mysterious and impalpable "qualities" to reach their present status as cultivable microorganisms, with a defined morphology and a complicated and polymorphic life history. All classes of microbiologists will be interested too in the discussions on the methods of maintaining the viability and virulence of bacteria, on selective bacteriostasis, the preservation of immune sera, the chemistry of antigens, and the chemical activities of microorganisms. Among matters of more popular interest were the investigations recorded by Mr. B. E. Proctor of Cambridge, Mass., on the microbiology of the upper air. With the aid of an apparatus which he calls the bio-aerocollector, successive samples of air can be collected by aeroplane and submitted to microbiological examination. Viable bacteria, moulds, and yeasts were found to be present at altitudes of 20,000 feet or more during all seasons of the year and even pollen grains could be collected at very high altitudes. The volume will appeal to readers who wish to gain some idea of current activities in the world of microbiological research.

DR JEKYLL DIAGNOSES MR HYDE

THIS was Sir Walter Langdon Brown's witty title for his Cavendish lecture to the West London Medico-Chirurgical Society on June 3rd. He began by saying that to the inheritors of nineteenth-century materialistic medicine it was not a welcome discovery that the psyche was a causal factor in disease. The Freudian attitude to the unconscious was perhaps apt to give it too dark and depressing an impression. He himself started, therefore, from a biological standpoint as Rivers would have done. Structurally numerous vestiges of earlier evolutionary phases were to be recognised in the human body, and the human psyche from this point of view was likewise a product of evolution which showed many archaic features. Rivers did not accept Freud's conception of a censorship; he regarded the fantastic and symbolic forms in which hysteria and dreams manifested themselves as a regression to a lower level which was natural to the infantile stages of human development, individual or collective. We reached the higher levels of our nervous system on the stepping-stones not only of our dead selves but of our long dead ancestors. The lecturer could not doubt that medicine would have to become increasingly psychological in its approach. The new psychology was a compromise, a selection from the doctrines of different schools, but it was the needs of the present time that had led to its development. If some academic psychologist scoffed at it the simple reply could be made that it worked. Although it was only in its infancy

its influence was overflowing beyond the confines of medicine into many other fields of thought, just as did Darwin's exposition of the principle of evolution. A compact body of well-informed medical opinion on the subject could be a much needed educative influence in a world which seemed to be steadily growing more psychologically sick. At the present time, added Sir Walter Langdon Brown, the darker side of the collective unconscious was assuming a volcanic energy. If it was not to prevail we must live up to the Greek maxim, "Know thyself," or Caliban would reconquer the island he inherited from Sycorax his mother. "Dr. Jekyll must diagnose Mr. Hyde by recognising his origin. Am I too optimistic in hoping that the profession to which Jekyll belonged can by psychological insight play an important part in leading the way to a calmer, humaner, and more rational world?"

SOYA BEAN OR SKIM-MILK FOR INDIA?

THE difficulty of securing proper nutrition for the people of Europe seems great enough, but it shrinks into insignificance compared with the difficulty of securing proper nutrition for the people of India. The nutritional laboratory of the Indian Research Fund Association at Coonoor was already busy with practical problems when it was directed by Sir Robert McCarrison, and its fine traditions are being carried on by Dr. W. R. Aykroyd (who passed straight to it from the Health Section of the League of Nations) and his Indian colleagues. One of the many questions tackled is what foodstuffs, of those available, can best be used to supplement inadequate Indian diets, and a fruitful inquiry of this sort has just been reported.¹ Two methods of investigation were followed. One method was to weigh and measure groups of suitable children of whom some received the supplements to be tested while others acted as controls, and the second method was to reproduce as exactly as possible the supplemented and unsupplemented diets and to compare the growth rate of rats receiving these. Excellent co-operation was obtained from missionary hostels for children where the diet was similar to, but rather better than, that consumed by the children at home. The supplements chosen were 1 oz. of dried (equal to 8 oz. liquid) skim milk daily, or 1½ oz. of soya bean daily. The result was very striking, and was confirmed by the animal experiments. There was an impressive increase in weight and height among the children receiving skim milk, compared with the negative controls, but no benefit to those receiving soya bean. An improvement in general condition, a lessened liability to illness, and an increased vitality were also conspicuous. The outcome of the test is surprising, because cultivation of the soya bean has been advocated as being perhaps the key to the nutritional problem of India. Certainly the supply of protein of good biological value in such diets as those under consideration, described as "poor Madrassi" or "poor Hindu," is low, and one would have expected that the comparatively good protein of the soya bean would have gone some way to remedy it. It is of course possible that it did do so, but that the coexistence of some second grave deficiency in the diet was a limiting factor which prevented the benefit from appearing. If the skim milk provided both the good protein and the other limiting factor a double benefit would appear. Aykroyd and Krishnan suggest that this second factor supplied by the skim

¹ Aykroyd, W. R. and Krishnan, B. G. *Indian J. med. Res.* 1937, 24: 1093.

milk and not by the soya bean is some constituent of the vitamin B₁ complex. A great problem of national housekeeping in many European countries is the disposal of a vast surplus of skim milk. India could use this if it were dried and Aykroyd and Krishnan discuss the practical politics of this suggestion. To-day they find, dried skim milk imported into India is too expensive to be used by the people but not enormously too expensive. It is subject to a 30 per cent import duty and if this impost could be abolished the cost would no longer be prohibitive and a big step would have been taken towards rescuing the children of South India from "a poor" state of nutrition, with their physical potentialities largely undeveloped.

BENZEDRINE

THE many and curious effects of benzedrine which remained unnoticed for twenty years after Barger and Dale described it in 1910 continue to attract the attention of investigators both of the dilettante variety who take a dose or two of the drug out of curiosity or under the stress of approaching examinations and of the more serious kind who write papers about it. An annotation in these columns¹ last year drew attention to its main effects—namely a rise in blood pressure, a relaxation of gastrointestinal spasm and a striking mental change involving euphoria, loss of fatigue heightened intellectual activity and talkativeness. Since then Davidoff and Reifenstein² have reported the effects of a 10-14 days course of benzedrine on normal subjects and on several groups of psychotic patients. The manifestations observed, both subjectively and objectively are extraordinarily numerous and varied. It is abundantly clear that benzedrine acts very differently on different people. In the ten normal subjects, elevation of mood over talkativeness and an increase in motor activity and general efficiency were the most frequent changes. If fatigue had been present it disappeared. But five of the ten developed a state of irritable restlessness which they did not relish and from the case reports we learn that the increase of activity and efficiency sometimes involved a dangerous degree of disrespectfulness to superior officers on telephones. Fatigue sometimes appeared in subjects who had not felt it before taking the drug. A host of minor bodily sensations pleasant and otherwise are mentioned. In a number of the subjects all effects diminished after the first few days, and little abnormality was observed in the second half of the period of administration. The action of the drug in the psychotic patients many of them in depressed states was roughly similar in kind but less in degree and there was the same great variability. A detailed analysis led to the tentative conclusion that more stimulation occurred in patients depressed from toxic or organic causes (such as alcoholism) than in those with purely psychogenic disorders and to the suggestion that the drug may be of value in making the minds of depressed or self-absorbed patients more accessible to investigation or psychotherapy. No use for it comparable to that in narcolepsy has emerged. On the other hand Solomon Mitchell and Prinzmetal³ have produced a fair case for its beneficial effect in post-encephalitic parkinsonism. They treated 29 patients some with benzedrine alone and some with benze-

drine and hyoscine or stramonium. Nearly all of them experienced a decrease in drowsiness, when this had been present and an increase in energy and well being which was therapeutically well worth while. No clear effect on rigidity or tremor could be demonstrated but—most strikingly—six patients who suffered from oculogyric crises lost this distressing symptom completely and two others almost completely under the influence of benzedrine. Since inhibition of sleep is the conspicuous central effect of benzedrine this observation accords prettily with Sir Arthur Hall's thesis⁴ that oculogyric crises are really episodes of partial and disintegrated sleep. Solomon and his colleagues found by contrast that the drug was of no use in arterio-sclerotic parkinsonism or in psychotic patients with conspicuous asthenia and out of their large experience they join other authors in giving warnings against its indiscriminate use. Its action varies so much and the effects of its repeated use are still so little known that caution is clearly advisable, especially in its administration to normal or relatively normal people as distinct from those with chronic and incurable disorders.

CORRELATION BETWEEN INTELLIGENCE AND SIZE OF FAMILY

AN investigation into the correlation between size of family and intelligence was recently undertaken⁵ by Mr R B Cattell Ph.D. with a subsidy from the Eugenics Society. Specially designed non-verbal intelligence tests were applied to two groups of children of ten years of age who went to school in the urban area of Leicester and a rural area comprising the villages to the north and south of Dartmoor. The urban group comprised 2873 children and the rural 861. Briefly Dr Cattell found that the stupider the children the larger were their sibs. In the urban area the mean number of children per family was 3.36 in the rural 3.03. The urban children of an intelligence quotient of 170 belonged to families wherein there were on average 2.36 children those with a quotient of 70 to families whose average size was 4.13. Comparable figures for the rural children were 1.80 and 4.21. Children with quotients between these extremes belonged to families whose size was roughly in inverse proportion to their intelligence. Dr Cattell draws from this data the conclusion that our national intelligence being very largely hereditary is declining at the rate of about three points in a generation or a point a decade. In a foreword he asks that his results and conclusions be submitted as early as possible for confirmation to a competent commission of social psychologists and economists and that if confirmed they should be taken into account by the Ministry of Health and the Board of Education.

The facts adduced by Dr Cattell are unquestionably interesting and suggestive but the informed reader will feel that they hardly support the crushing superstructure of social and philo-sophical theories which is built on them. The technical basis of the inquiry receives but the scantiest discussion. No details are given of the specially designed non-verbal intelligence tests which were employed; the reader is not told whether group tests were used and the all-important question of sampling is dismissed in a footnote. The confident quality of the generalisations and the boldness of the

¹ *Lancet* 1936 2, 11. ² *J Amer med Ass* May 27, 1937, 103. ³ *Id.* 1937, 103. ⁴ *Id.* 1937, 103. ⁵ *Id.* 1937, 103.

⁴ *Id.* 1937, 103. ⁵ *Id.* 1937, 103. ⁶ *Id.* 1937, 103. ⁷ *Id.* 1937, 103. ⁸ *Id.* 1937, 103. ⁹ *Id.* 1937, 103. ¹⁰ *Id.* 1937, 103.

recommendations might even have been excessive if they had been based on hundreds of thousands of cases drawn from every county in England. Dr Cattell deduces from his figures that a real deterioration of our race is going on here and now, day by day, hour by hour. To increase the medical and social services of to-day, without at the same time demanding restriction of births by those who use them is, we are told, as damnable a piece of wickedness as has ever been condemned by moral law. The husband should, indeed, be imprisoned for bringing into the world children beyond his means and, in all probability, below average intelligence. In discussing remedies, military similes are used. The presence of deterioration, having now been clearly proved, can be attacked. In this generation, the fight has been launched; the fight is on, and will be won by men and women fit for the hand to hand fighting of committees, with stamina to carry the struggle into the dust and heat of social welfare work in sordid cities, and with courage to face what may at first be a withering fire from strongly entrenched ignorance and sloth. Dr Cattell's book suffers from language such as this:

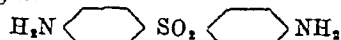
SULPHANILAMIDE

EVIDENCE that *p* aminobenzenesulphonamide (= sulphani-*l*amide) protects mice against meningococci¹ has led to its trial not only in meningococcal² but also in gonococcal infections. R. M. Fry and also Buttle and his colleagues have found that it is as effective against small numbers of gonococci as it is against meningococci in broth medium *in vitro*, and although therapeutic tests on animals cannot be carried out with the gonococcus the experimental evidence seems to justify its further trial in this infection. Dees and Colston³ of the Johns Hopkins Hospital, Baltimore, report that since February of this year they have used sulphani-*l*amide in 47 cases of gonococcal infection of the genito-urinary tract. In 36 of these the gonococci and the urethral discharge disappeared in less than five days, and in only 3 was there no demonstrable response. "The most striking feature of our experience," they write, "has been that in no instance has there been a progression of the infection, even in cases which showed no response to treatment." It is not stated how many of the patients returned for examination, but in only 3 of those who did so was there any recurrence, and these were all men who had discontinued treatment after a prompt response. Some patients tolerated a daily dose of 1 gramme per 20 lb of body-weight for as long as a month without serious ill effects, but dizziness and lassitude were some times noticed at first, and sulphæmoglobinæmia was recognised in 1 of the first 19 cases (the remainder are not fully reported). It is not surprising therefore that Dees and Colston sound an "emphatic warning" about the possibility of unpleasant reactions, and though they are profoundly impressed by the prompt response, and especially by the way in which the spread of infection was checked—their object in presenting a report at this stage is to stimulate the careful use of sulphani-*l*amide in cases where large numbers of gonococcal infections can be closely studied. Such tests are already in progress in England, but we understand that the results so far obtained are less encouraging than those of Dees and Colston.

The latest paper by Rosenthal and his colleagues of the United States Public Health Service⁴ describes further observations on sulphani-*l*amide and related compounds in experimental pneumococcus, streptococcus, and meningococcus infections. These workers have prepared a new compound, disulphani-*l*amide, which on subcutaneous administration (but not by mouth) proved slightly more effective than sulphani-*l*amide against streptococcal infections in mice, though its "acute toxicity" was only one fifth that of sulphani-*l*amide. It was also more effective against meningococcal infections of mice. In this country Gray et al.⁵ have also prepared disulphani-*l*amide and report that (when given by mouth) it is slightly more effective than sulphani-*l*amide against streptococcal infection of mice, while its toxicity is half that of the sulphani-*l*amide by this route. The formula of disulphani-*l*amide is



and it is interesting to compare its effect with that of diaminosulphone as described by Dr Buttle and his colleagues.⁶



In the streptococcal infections of mice diaminosulphone proved 25 times as toxic as sulphani-*l*amide but 100 times as effective.

ARTIFICIAL HANDS THAT WORK

Baron Larrey relates in his memoirs that after the battle of Brezina he lay in bed, too exhausted to sleep, for on that day he had done more than 200 amputations, and as he lay there the thought came to him that it should be possible to use the muscles of the stump to provide motive power for an artificial limb. Some ninety years later Vanghetti, an Italian physiologist, made the first experiments on these lines, but the idea did not find practical application until the late war, first in Italy and then on a larger scale in Germany. V. Putti described some of these knee plastic operations at the Royal Society of Medicine in 1918,⁷ and in 1923 came a brilliant monograph from Sauerbruch of Berlin.⁸ First, a tunnel lined with skin is made through the triceps behind and another through the biceps in front. (If the amputation has been below the elbow joint, then the tunnels are made in the extensor group of muscles behind and in the flexor group in front.) When healing is complete each tunnel is traversed by a removable ivory peg from each end of which a string passes to the artificial limb. The hand itself has four fingers acting as one unit, and the thumb acting as a second unit, and movement of the units is effected by contraction of the flexor or extensor muscles of the arm. At the end of his Macewen memorial lecture delivered in the University of Glasgow last week Prof Sauerbruch showed a film illustrating the remarkable activities possible for patients who had lost both arms, several of the patients shown were in good employment as telephonists. The film opened with a view of two men fitting their own limbs without assistance. One of them then dressed himself, being able to carry out the finer movements necessary to button up trousers and coat. Another man, wearing his artificial hands, emptied a box of matches on a table and then with

¹ Buttle et al. *Lancet* 1936 1, 1286. Proom, H., *Ibid* Jan 2nd 1937 p. 16.

² See *Lancet* May 15th, 1937 p. 1153.

³ Dees, J. F., and Colston, J. A. C., *J. Amer. med. Ass.* May 29th 1937 p. 1855.

⁴ Rosenthal, S. M., Bauer, H., and Branham, S. F., *Publ. Hlth. Rep. Wash.* May 21st 1937 p. 662.

⁵ Gray, W. H., Buttle, G. A. H., and Stephenson, D., *Biochem. J.* May 1937, p. 724.

⁶ Buttle et al., *Lancet* June 5th 1937, p. 1331.

⁷ *Lancet* 1918 1, 791.

⁸ Sauerbruch, F. (1923) *Die willkürlich bewegbare künstliche Hand*. Berlin.

fine dissecting forceps picked up each individual match and replaced it in the correct position in the box. The film next showed an exhibition of writing by two patients, one of whom had also lost an eye. Another two patients made a combined demonstration in which one entered carrying a pail of water which he poured into the empty pail carried by his colleague. This manoeuvre completed they offered each other cigarettes and lit up in the usual way. Finally there was a close-up of two artificial hands in action, a shot which had æsthetic as well as technical value.

THE FERMENTATION OF PASTEUR AND CLAUDE BERNARD

It is perhaps some consolation for ordinary men to behold great ones occupied by little quarrels. Generally speaking the great figures in the history of science have afforded fewer opportunities for us to reap this kind of consolation than have those who were great in literature and in the arts. Lawyers too, and certainly politicians, provide more frequent and more violent exhibitions of invective called out by trivial causes than do the leaders of science. These considerations heighten the interest of the story which Dr J. M. D. Olmsted relates¹ under the title *Claude Bernard's attack on Pasteur*. The title is a little misleading for the attack is to be found in notes which Bernard had never published and in all probability never intended to publish at any rate in the form in which they were found. The two men were close friends in their lifetime, Bernard being some nine years older than Pasteur whose career he actively encouraged. Pasteur it was however who was instrumental in gaining much needed improvements in facilities for scientific work in Paris and it was through his polemics that the Emperor was interested and that a suitable laboratory was provided for Bernard. The two scientists were as it well known both interested in the phenomena of fermentation and engaged in experiments to find out its nature and causation and to demolish the theory of spontaneous generation. Their attitude to the question was, however, not the same. Bernard believed that the process of fermentation was purely a physico-chemical one while Pasteur maintained that it was a form of life and did not occur without the presence of some living organism however minute. Bernard had actually helped Pasteur to demonstrate the truth of his contention by supplying the blood of a dog which Pasteur sealed in clean glass vessels and kept in an oven at 30° C. for six weeks. At the end of this time Pasteur was able to demonstrate to the Academy of Sciences that even blood would not ferment out of contact with germ laden air. Bernard nevertheless continued his own experiments, hoping always to be able to demonstrate the presence of some soluble ferment which caused the phenomenon of fermentation without the necessary presence of any living thing. Notes describing these experiments and the conclusions at which he was arriving contrary to those of Pasteur were the cause of the quarrel which arose after Bernard's death. Dr Aronval, Bernard's pupil and disciple who had been given the task of going through his dead master's papers took certain notes, with Paul Bert and Daubre to Berthelot. They appeared soon after in the *Revue Scientifique* with a preface by Berthelot, who had previously attacked Pasteur on the subject of fermentation. The fat was in the fire. How Pasteur found in the notes contradiction of the facts and conclusions which he had presented before the Academy and

absolute condemnation without any restriction of my views on fermentation in general and on alcoholic fermentation in particular how he did not believe at first that the notes were genuinely those of the dead Bernard and how he triumphantly produced new and convincing evidence in support of his own view should be read in Dr Olmsted's lively account. In a sense both the great men were right. Fermentation is a physico-chemical process as Bernard maintained, and its cause is an enzyme which is provided by a living organism as Pasteur asserted. Moreover at present no one has succeeded in producing the enzyme synthetically without the aid of living cells.

THE PAGET TRADITION

EVERY year the Research Defence Society commemorates its founder and first secretary by a lecture delivered at the annual meeting. On Tuesday last Prof. Grey Turner was the lecturer and in speaking on the debt of research to the Paget tradition he paid tribute to both father and son. Stephen Paget owed his belief in experiment and his real for science to his upbringing in the home of one of the leaders of medicine—an untiring worker who combined every day clinical practice with careful measurement, observation and collection of facts; a surgeon steeped in the history of surgery who knew what experiment had done for his art. Sir James Paget's idea of the doctor's aim is reflected in his presidential address to the International Congress of Medicine of 1881. We had better not compete where wealth is the highest evidence of success; we can compete with the world in the nobler ambition of being counted among the learned and good who strive to make the future better and happier than the past. And again in an address in 1863 to students at Bart's: That which will most harass you in your practice will be the apparent success of dishonesty. You must be prepared for it for it will not cease in your time if indeed it ever does. To Stephen Paget his father's biographer James Paget was a continuing inspiration and as Prof. Grey Turner said the most valuable of all the father's work for the promotion of research was the stimulus he gave to his son. As secretary of the Research Defence Society from its foundation in 1908 till his death in 1926, Stephen Paget was indefatigable in serving the cause of experimental medicine. Prof. Turner recalled his labours during the late war when attempts were being made to discourage antityphoid inoculation and Paget worked to the limits of his strength in delivering lectures to the troops in training. Poor health again interrupted his service as director of the Anglo-Russian Hospital in Petrograd but up to the end of his life he used all his energy in the work he had chosen—work in which his object was always to see fair play to put the real facts squarely before his hearers and to inform them of what was often unknown and ill understood. That is essentially the honesty of which his father spoke and it is the enduring honesty of science.

INTER-DEPARTMENTAL COMMITTEE ON ABORTION—This committee which has been set up under the chairmanship of Mr. Norman Birkett, K.C., to inquire into the prevalence of abortion and the law relating thereto and to consider what steps can be taken by a more effective enforcement of the law or otherwise to secure the reduction of maternal mortality and morbidity arising from this cause, had a preliminary meeting and will shortly proceed to hear evidence. Communications may be addressed to the secretary, Committee on Abortion, Ministry of Health, Whitehall, S.W. 1.

¹ *Lancet* med. J. 11th March, 1937 p. 114

SPECIAL ARTICLES

THE LISTER INSTITUTE

A YEAR'S INVESTIGATIONS

(Concluded from p 1422)

New growth factors in aqueous yeast extracts—Dr Macrae and Miss C E Edgar have shown that aqueous yeast extracts contain two factors, besides vitamin B₁ and lactoflavin, necessary for the growth of rats. One of these may be distinct from vitamin B₆, as described by György.

Chemistry of vitamin B₁—Extending their earlier work in Edinburgh Dr Todd and Dr F Bergel have completed a synthesis of aneurin (vitamin B₁). The synthetic product was identified with the natural vitamin by chemical and biological methods and the synthesis of a number of related compounds has been undertaken with a view to determination of the structural features essential for antineuritic activity.

Essentials for reproduction—Miss Hume and Miss H Henderson Smith have continued their study of the dietary deficiency in rats which affects their breeding capacity, the full term young dying in utero or failing to survive after they are born. Preliminary work by Dr Todd and Dr Bergel having confirmed the value of rice germ oil as a starting material for the isolation of the anti-sterility factor (vitamin E), the investigation of the unsaponifiable fraction of this oil as well as of the more commonly used wheat germ oil has been taken up in collaboration with Dr H Waldmann and Dr T S Work. From rice germ oil several crystalline alcohols have been isolated and the various products are at present being tested biologically. It is not yet possible to state definitely whether or not any one of them represents the pure vitamin.

Vitamin C requirements—Mr S S Zilva, D Sc, has studied the relationship of the intake of ascorbic acid to the vitamin C content of the "selective" organs and other tissues of guinea pigs, to their susceptibility to scurvy, to the urinary excretion of ascorbic acid, and to their general well being.

He found that in order to attain the maximum concentration in the tissues ten times the protective dose had to be given. Only traces of the vitamin were established in the "selective" tissues when a daily dose 2-3 times as great as the protective dose was administered. Guinea pigs, the tissues of which contained these minimum amounts of vitamin C, were, however, observed to live for a number of years during which time they attained very high weights. Furthermore the time taken by guinea pigs to succumb to scurvy when placed on a scorbutic diet was not appreciably different, whether the tissues carried their maximum load of ascorbic acid or whether only traces of it were present in them, prior to the animals being deprived of the vitamin. The accumulated vitamin C in the body of the guinea pig, therefore, does not act as a store in the true sense of the word.

The results of this investigation are in accord with the general observation made by Zilva and S W Johnson some years ago on human beings and lend support to the view that there is a wide margin of "unsaturation" with vitamin C which has no obvious detrimental effect on the health of the individual.

Vitamin C and cataract—The presence of vitamin C in the aqueous humour and lens in relatively high quantities has attracted the attention of those interested in the aetiology of cataract and contradictory views are held concerning the significance of this fact. Dr Johnson has devoted his attention to the fate of the ascorbic acid in the humours and lens of

the eye of the guinea pig in the process of depletion of vitamin C, but his results suggest that the deprivation of guinea pigs of vitamin C has no direct bearing on the aetiology of cataract in these animals.

Synthetic ascorbic acid in canning fruits and vegetables—It has previously been shown that it is possible to add ascorbic acid to fruits and vegetables before canning without incurring serious destruction of the acid during the process. Preliminary work by Dr Zilva and Mr T N Morris has been carried out on the stability of the acquired antiscorbutic potency of these final products. Apples canned in January, 1935, were tested in September, 1936, by the biological method, and no perceptible loss in activity during storage was recorded.

CALCIFICATION

Calcifying mechanism of bone—Previous work has shown that the activity of the calcifying mechanism of the hypertrophic cartilage of the bones of rachitic rats is generally lower than in that of normal embryonic bones. Is this decreased activity merely a sequel to the failure of the cartilage to become calcified or is it partly responsible for this failure? Prof R Robison, F R S, and Miss J Barnett have observed a very striking increase in the activity of the calcifying mechanism in bones of rachitic rats which have received a single moderate dose of calciferol (5-30 international units vitamin D) within 24-48 hours of death. Calcification of these bones in vitro occurs at unusually low levels of calcium and phosphate concentrations, even lower than those required for normal bones.

It has been shown by other workers that the type of rickets induced by addition of beryllium salts to the diet does not respond to vitamin D therapy. In agreement with this it has now been found that the administration of very large doses of calciferol (up to 100,000 I U) shortly before death produces no increase in the very low activity of the calcifying mechanism of the bones.

Calcification of the aorta—Prof Robison and Dr M Laskowski (Warsaw) have completed their experiments on changes in the aorta in hyper-vitaminosis D. Calcification of this vessel occurs very rapidly in rats receiving large doses of calciferol with a diet of high calcium content but may remain absent if the calcium intake is sufficiently reduced. Experiments made with the aorta of these rats have failed to produce any evidence of changes in the organic tissue before deposition of calcium salts but facilitating such deposition, analogous to the effects observed in bone. The results must be taken as supporting the view that calcification of the aorta in hypervitaminosis D is primarily the result of supersaturation of the blood with calcium salts.

Lactation—Dr G A Grant has investigated the influence of certain hormones in reinstating lactose synthesis in vivo in regressing mammary glands of female guinea pigs which have just ceased lactation. The lactogenic factor, prolactin, induced these regressed glands to produce only a limited secretion of a milk like fluid of very low lactose content (0.2-0.4 per cent). However, active secretion of milk containing 2.5 per cent lactose is produced by prolactin, if the secretory cells of the acinar tissue have undergone a reconditioning process through treatment of the animals with oestradiol and progesterone. Certain substances, for example diphenyl α naphthylcarbinol which do not possess the phenanthrene nucleus characteristic of the sex hormones,

also caused mammary growth in male animals though the possibility of this being an indirect effect on the general endocrine system requires further examination

SERA AND VACCINE

Specific antigen of *Shiga* bacillus.—At Elstree Mr W T J Morgan Ph.D. has continued his investigations into the nature of the specific antigen of *B. dysenteriae* (Shiga). It has proved possible to recover the bacterial antigen in a form which can be considered to be its natural state. It is a poly-saccharide-lipoid complex which readily engenders in the rabbit specific agglutinins and precipitins for *B. dysenteriae* (Shiga). The polysaccharide represents about 40 per cent of the antigenic complex, an account of its chemical structure was given in last year's report.

Spoore-bearing anaerobes.—Mr D W Henderson Ph.D. has continued his study of the protective substances in specific antibacterial sera which control experimental infection with *Clostridium oedematis maligni*. His observations suggest that antibacterial prophylaxis may find practical application in the control of infections associated with this organism.

Meningococcal infection.—Dr G F Petrie has confirmed the statement that an inoculum containing a comparatively small number of living meningococci suspended in a solution of mucin is lethal to mice by intraperitoneal injection. It is now possible to estimate without difficulty the relative virulence of meningococcal strains by means of the mucin technique. Thus a Group I culture maintained under routine conditions for the past three years has proved to be as virulent as several freshly isolated strains. It is intended soon to investigate the therapeutic action of antimeningococcus sera in mice with the aid of mucin.

Type specific antistreptococcus sera.—Dr Petrie and Dr Henderson have immunised rabbits and horses with three serological types of streptococcus which are often present as pathogenic agents in a variety of streptococcal infections in man. The rabbits have responded satisfactorily as judged by their agglutinin titres, but the horses have yielded sera of much lower titre. Experiments are to be carried out in mice to ascertain whether the protective action of the experimental antistreptococcus sera is strictly type specific. Preliminary tests indicate that the limits of error are wider than those of similar tests in use for titrating antipneumococcus serum Type I.

Stabilising action of glycerin on toxins and sera.—The experience of the past fifteen years at the serum department has proved that the addition of 50-60 per cent glycerin to tetanus toxin has a remarkable stabilising action on it and thus facilitates its use as a laboratory standard in routine tests of samples of antitoxin.

Within recent years the principle has been extended to the toxin of *Cl. welchii* and to dysentery toxin (Shiga). Technical difficulties have hitherto precluded the application of the method to diphtheria toxin but Dr Petrie has now prepared a glycerinated toxin by a simple method which permits of some degree of purification and of a threefold concentration of the lethal toxin. The 1 + dose of this preparation is 0.0133 c.c.m. and the average lethal dose is 0.0003 c.c.m. for guinea-pigs of 250 grammes. The addition of glycerin to antitoxic and antibacterial sera is known to have a stabilising influence on the specific antibody and the method has been applied to most of the laboratory serum standards in use in the department. Glycerinated preparations of this kind possess the great advantage that they can be stored at -10°C .

Dr Petrie and Dr Morgan have made further observations on the rate of destruction of the protective

antibody in batches of natural and concentrated antipneumococcus serum Type I, on storage. The concentrated product loses potency much faster than the natural serum, and the loss takes place mainly during the first year. Dr Petrie has begun similar observations on the stability of the specific antitoxin in anti-dysentery serum (Shiga).

Elementary-body suspensions in Jennerian prophylaxis.—Behrens and Neilson in 1935 described a method for purification of vaccinia virus by use of electric precipitation of the associated proteins in a suspension of vaccine pulp. Dr D McClean has studied this method and its application to the production of bacteria free suspensions of elementary bodies suitable for intracutaneous injection in Jennerian prophylaxis. It appears that the storage of elementary body suspensions of vaccinia prepared for clinical use is unlikely to present serious difficulties.

TISSUE PERMEABILITY AND LOCAL IMMUNITY

Dr McClean has completed the observations begun by Dr Favilli (Perugia) and himself on the relation between tissue permeability and local immunity to infection.

The inhibition of the diffusion of crude tests extract in the dermis by Boerdefka's "antivirus," plain broth, and various substances known to reduce the permeability of the cell was reported by Favilli and his collaborators. This has been confirmed using purified preparations of the diffusing factor from the testis (Culturo filtrates from certain invasive bacteria cause a dramatic increase in the permeability of the tissues and it has been shown that the diffusion of the purified spreading factors obtained from these filtrates is similarly inhibited by the same agents. The mechanism of this inhibition has been investigated and it appears that it is the inflammatory cellular response provoked by the injection of "antivirus" plain broth, and other substances, which renders the tissues less permeable to these diffusing factors whether they are derived from the testis or from bacteria. These observations supplement the work of Menkin on the local fixation of inflammatory processes, and they indicate that local immunity may be explained at least in part by a non-specific reduction in the state of permeability of the tissues. They also indicate the importance of the balance between the diffusing activity of invasive bacteria and the reduction in local permeability that results from the inflammatory response by the host.

Apart from the purely local reaction it is known that the diffusing factors of bacterial origin are antigenic and provoke the appearance of neutralising substances in the serum. Preparations are being made for a serological investigation of the relation between purified diffusing factors derived from different bacterial species such as *Staphylococcus Cl. welchii* and *Cl. chauvoei*.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

TOWARDS A NATIONAL PUBLIC HEALTH POLICY

AN important step in the direction of an agreed programme between organised medicine and the State for the care of the indigent sick was taken on May 24th when the house of delegates of the Medical Society of New York accepted a report of its committee on the provision of medical care. The report accepted as a principle that the health of the people is a direct concern of the Government and a national public health policy directed toward all groups of the population should be formulated. This extension is to be governed by the approval of the local medical profession and is to incorporate to the greatest possible extent the services of the general practitioner.

in preventive medicine. Among the practical proposals designed to carry out these principles are the following:

"That the first necessary step toward the realisation of the above principles is to minimise the risk of illness by increasing preventive efforts through extension of public health services, federal and local.

"That an immediate problem is provision of adequate medical care for the medically indigent, the cost to be met from public funds.

"That public funds should be made available for the support of medical education and for studies, investigations and procedures for raising the standards of medical practice. If this is not provided for, the provision of adequate medical care may prove impossible.

"That public funds should be available for medical research as essential for high standards of practice in both preventive and curative medicine.

"That public funds should be made available to hospitals that render service to the medically indigent and for laboratory diagnostic and consultative services. That these consultative and laboratory diagnostic services shall be established only in regions where the medical profession approves the need for same, and after consultation with the local medical profession in the area affected.

"That in the allocation of public funds existing private institutions should be utilised to the largest possible extent and receive support so long as their service is in consonance with the above proposals."

These proposals, along with a request for a working definition of the term "adequate medical care," were before the house of delegates of the American Medical Association when it met last week.

THE TRAILER

The automobile trailer, like the house sparrow, is said to have been imported from England. In recent years these mobile homes have manifested a remarkable creative faculty. Since Mr Sherman, whose money came from his father's vaccine laboratory in Detroit, exhibited the first trailer at a Detroit auto mobile show in January, 1930, his business has grown by leaps and bounds. Last year he sold 6000 "covered wagons." Total factory production was about 35,000, and the *Automobile Daily News* estimates that 160,000 trailers were on the road.

A survey of the American Municipal Association, the Society of Planning Officials, the American Public Welfare Association, and the National Association of Housing Officials arrives at the estimate that this summer there will be 400,000 automobile trailers in use, housing 1,250,000 persons. It is not necessary to accept Roger Babson's forecast that within twenty years half of the population of this country will be living in trailers before we convince ourselves that trailer housing constitutes a genuine public health problem.

When is a trailer a house? When its wheels have been removed (as one of our recent ordinances decrees) or when it has stood for a specified number of days in one particular spot? Most trailers have no refrigeration—what happens to the food and milk carried on board? The common solution of this problem has led to the nickname of "tin can tourists" being applied to trailer folk. Above all, how shall the trailer dispose of its garbage and sewage?

Florida welcomes trailers and provides comfortable sanitary trailer camps equipped with running water, sewerage connexions, electric current, shower baths, and toilet facilities. Rates for a site in such camps vary from one to ten dollars a week. If the trailer contains children Florida charges a licence fee of 12 dollars towards the cost of their education. In some of the camps doctors, themselves living in trailers, are licensed to practise medicine among the rheumatic, bronchitic, sinus infected refugees from northern cold and snow. On New Year's Day trailers crossed the State line into Florida at the rate of 25 an hour.

Northern and western States have not all proved themselves as adaptable to the refugees from summer heat. Municipal ordinances, it is whispered, have been devised ostensibly to protect the public health but actually in the interests of hotel proprietors and real estate firms. Unable to rely on finding a camp with sewerage provisions, the trailer builders have resorted to a number of ingenious devices. There is the chemical toilet, of course, whose treated effluent is probably harmless if it is properly treated. Or there may be a simple container with provision for "decorising" until opportunity for decent burial occurs. A modern contrivance makes use of a waterproof paper bag which can be securely sealed after use and disposed of at leisure.

There is at least one travelling tuberculosis sanatorium that provides a perpetually ideal climate and the distraction of travel, as well as all modern medical care and (it is said) adequate rest for the patients.

IRELAND

(FROM OUR OWN CORRESPONDENT)

A SEQUEL TO INOCULATIONS THE JURY'S VERDICT

THE inquest at Ring, co. Waterford, on a girl of 12, who had died from generalised tuberculosis following an immunising injection against diphtheria (see *Lancet* May 29th, p. 1305), was continued on June 10th and concluded at the district hospital, Dungarvan, on June 12th. Dr Walsh, the acting coroner, put the following questions to the jury: (1) When, where, and from what cause did the deceased die? (2) Was the ulcer on her arm a tuberculous ulcer? (3) If it was a tuberculous ulcer did the general tuberculous condition from which she died spread from this? (4) If it was a tuberculous ulcer, did the microbes causing it enter the body at the time the child was inoculated against diphtheria? (5) If they did enter it at the time what was their source and how did they come to be injected?—With regard to his last question the coroner said that the lines for an investigation with any hope of reaching a solution seemed to him to be almost endless. It must needs be a long, searching, and highly scientific one, more properly carried out, in his opinion, by a body of scientists than by a coroner's jury. "If you believe," he said to the jury, "that you are not in a position to give an opinion as to the origin of the tubercle bacilli, you will say so. And I cannot see how you are in such a position." The jury then brought in a verdict as follows:—

"That we unanimously agree with the medical testimony that Siobhain Kennelly, died at Knockenpower on April 20th, 1937, from toxæmia and purpuric hæmorrhage consequent to general miliary tuberculosis infection and that we are of opinion, according to the evidence placed before us, that the tuberculous condition was originated by the inoculation of prophylactic into the right arm of Siobhain Kennelly in November 1936 and that we are of opinion that the contents of the 25 c.c. bottle of prophylactic labelled T A F Burroughs Well come, from which a portion of the material was extracted by Dr Daniel McCarthy for the purpose of the aforesaid inoculation, contained tubercle bacilli, and that the inoculation was carried out by Dr McCarthy according to the most approved surgical technique. Every precaution was taken by him and by those who assisted him to guard against infection arising from contaminated surgical applications and we exonerate them from any blame in this matter."

Giving evidence about other children at Ring College who suffered after a similar injection, Dr P. Kiely (Cork) said he had examined 10 of the original 11

children and found practically all the primary lesions healed, and in all the condition of the glands greatly improved. Replying to counsel he said that in his opinion the future development of the children would be entirely favourable.

TREATMENT OF TUBERCULOSIS

Speaking at the annual meeting of the Royal National Hospital for Consumption for Ireland on June 10th Dr T G Moorhead drew attention to the recent addition of a fully equipped operating theatre. The facilities for operative work were now as good as in any hospital in Great Britain or Ireland. He added that it had been stated that it was proposed to establish sanatoriums in every county in the Irish Free State. He thought that if that were so they should limit their activities to incurable cases. If they were to compete with such institutions as those at Newcastle and Peamount they would do more harm than good. He understood that there was also a project to establish a central surgical hospital for tuberculosis. That might be a good thing but it was a better thing to have treatment carried out in one institution.

MEDICINE AND THE LAW

Dismissal of Officials under Lunacy Act

THE tenure of officers appointed under the Lunacy Act has been examined afresh by the Court of Appeal in *McManus v Bowes*. Section 278 of the Act requires the visiting committee of every mental hospital to appoint a medical officer and adds that the committee may remove any person appointed under this section. Does the word remove mean remove at the committee's pleasure? If a statutory authority has power to appoint and remove officers, is it entitled to dismiss at a moment's notice? This said Lord Justice Slesser is a matter of great importance because it goes to the root of the tenure of everyone employed under the Lunacy Act.

Dr Hugh McManus formerly assistant medical officer of the Park Provost Mental Hospital, Sherborne St John Hampshire claimed damages against the Hampshire Joint Mental Hospital Committee for wrongful dismissal and also sued for the return of his superannuation contributions. He had originally sued Dr R F B Bowes the former medical superintendent of the hospital on the ground that Dr Bowes had unlawfully procured the committee to dismiss him. At the trial before Mr Justice Macnaghten it was held that there was no evidence to go to the jury in support of the allegation against Dr Bowes. On appeal the Court of Appeal likewise released Dr Bowes from the proceedings for want of evidence against him. The case was then dealt with on the issue of the power to dismiss without notice. It was argued for Dr McManus that there was nothing in the reported cases which should incline the court to interpret remove as remove at the committee's pleasure. Lord Justice Macnaghten was puzzled by the fact that the committee had purported to give Dr McManus three months' salary in lieu of notice. Under what power did the committee do so? Could the district auditor have so charged this sum as an illegal overpayment? Lord Justice Slesser asked whether if an official had a two year contract he could still be dismissed at pleasure? After full argument the Court of Appeal was unanimously of opinion that the committee had power under the Lunacy Act to remove one of its servants at will. The judge at trial had ruled that the plain-

tiff's claims were barred by the Public Authorities Protection Act 1893 because they were not brought within the statutory time-limit of six months. The Court of Appeal declined to interfere.

Substantial Damages for Release of Mental Patient

As the medical profession is well aware, there can be heavy damages against a doctor whose certificate causes a mental patient to be confined or retained in an institution. The substantial award of £3500 has now been given in the converse case of a too early release. At Liverpool assizes last week Mrs. Bertha Holgate with her husband successfully sued the Lancashire Mental Hospitals Board and two doctors of the Calderstones Institution near Blackburn. The defendants she contended had committed a breach of statutory duty and had been negligent in licensing John Lawson a mental defective to be absent from the institution. Lawson had attacked her at her home and she had suffered serious injuries. Sir Patrick Hastings, K.C. who opened the plaintiff's case with characteristic vigour stated that Lawson aged 29 was a dangerous criminal who had been charged with housebreaking, larceny, assault, attempted rape and robbery with violence. Lawson had been an inmate of Rampton Asylum. From this State institution he was transferred to Calderstones on the assumption that his condition was improved. Lawson's brother (described by counsel as a working man with very little leisure to look after anybody else) applied for his temporary release on licence and assured the committee that the patient would remain under his personal supervision. John Lawson went to Mrs. Holgate's house, said he was hungry and asked for a cup of tea. When her back was turned, he picked up a piece of wood, came up behind her and struck her on the head. Her skull was fractured and her wrist and hand were also injured. One year of her life had been wiped out and no one could say how many more years she might not lose through her injuries. The two defendant doctors, Dr F A. Gill and Dr G S Robertson were respectively the superintendent and deputy superintendent at Calderstones. Dr Robertson had signed the licence. Sir Patrick Hastings emphasised that only the superintendent had authority to sign.

Counsel for the defendants reminded the jury that Dr Gill had spent a lifetime in the care and treatment of mental deficiency and Dr Robertson had 12 years' experience of such work. There were seven offences on record against Lawson but on five of these occasions he was either bound over or put on probation; all the cases except the last had occurred before he was 18. He had shown no signs of violence at Rampton Asylum, his transfer to Calderstones indicated a progressive improvement and it was reasonable in view of his recent history to let him out for a short time to see how he behaved under proper supervision. The committee had seen and questioned the brother, it considered the accommodation and supervision would be adequate. Finally it was urged that the two doctors had acted upon honest belief based upon their medical skill and experience. Error of judgment was not negligence. The jury however awarded £3,500 to Mrs. Holgate and £700 to her husband. The defendants had paid £2000 into court with denial of liability. This sum was ordered to be paid out to Mrs. Holgate in part satisfaction of her award and judgment was given in accordance with the jury's findings. As the judge observed in the course of his summing up it is easy enough to be wise after the event.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

BY TWELFTH MAN

III

Sir Auckland Geddes advised his medical audience in Edinburgh to cease "their fear of the non rational." Such advice might be thought superfluous in our day when the behaviourists maintain that there is no non material element in our make up, when determinists declare that we are impelled by a *vis a tergo* which is both incalculable and irrational, and when the Freudians insist that our conduct is determined not by reason or free-will but simply by our instinctive desires. He was not, however, urging the claims of irrationalism as a satisfactory philosophy but pointing out that there are many facts and many phenomena which reason cannot elucidate. Such a view has become a commonplace of twentieth century science. Modern men of science, says Bertrand Russell, "believe that ascertainable truth is piecemeal, partial, uncertain, and difficult." It is possible to be grateful for this new found humility of the scientists while still believing that reason remains man's guide to as much truth as is ascertainable, that his reason is free and may still be used to control his instinctive desires

* * *

G. K. Chesterton in his autobiography has an amusing description of the discussion which took place in the village of Beaconsfield concerning the nature of the proposed war memorial. G. K. C., as might be expected, argued strongly for a cross but the "local doctor, an admirable physician but a sceptic of rather a schoolboy sort, observed warmly, 'If you do put up a thing like this, I hope you'll stick a light on it, or all our cars will smash into it in the dark.'"

This is a perfect illustration of the practical, the materialist approach to life's problems which is the normal attitude of the doctor. There is no need to defend this outlook in a medical journal, its virtues shone for us like a good deed in a naughty world. The limitations of such an approach are less obvious, for we are mostly 'sceptics of rather a schoolboy sort.' We were trained to believe that the intangible was non real, the invisible non-existent, and what we could not explain was not merely inexplicable but irrational also.

It is difficult to slough off habits of thought which have dominated us for generations, but if, while still retaining unrepentantly our belief in rationalism as a working day philosophy, we could acquire something of the spirit of our modern physicist philosophers, we might get with it incalculable gain. "Come down to brass tacks," declares our Beaconsfield doctor, "granted that there is this new spirit in modern science, what can it profit clinical medicine which has no concern with the fourth dimension?" While we await an answer to this pertinent question from some undiscovered clinical genius, let me attempt an inadequate reply. I believe that in each age there are a few dominating ideas which permeate and fashion the thought of the day. These ideas are valuable not because they enunciate fresh truth but because they reveal new aspects of truth. I believe that clinical medicine stands to day in urgent need

of such reinterpretation. There are hosts of new facts, imperfectly digested, which demand new generalisations and such generalisations would alter profoundly our conception of disease processes in the individual. But even if this new comprehension is denied us, I think the modern scientific spirit might still do much for us. It would make us more receptive of new ideas in medicine and more distrustful of new remedies. It would make us less satisfied with the diagnostic labels which we attach to patients and less disappointed if a piece or two of the jig saw puzzle is missing, as it so often is. It would help us to look at disease constitutionally, to regard it as a reaction of the whole man, mind and body—an individual reaction. It would kill forever those monstrous text books of differential diagnosis that depend on an analysis of symptoms—*katabolic* and not *anabolic*. It would give us a juster appreciation of the results of laboratory research and an enhanced ability in the fitting of these new facts into the mosaic of our clinical conceptions. It would make us more critical of our own dogmatism, more aware of our enormous capacity for self-deception. It would keep Cromwell's cry ringing in our ears, "Gentlemen, I beseech you, by the bowels of Christ, to remember that you may be mistaken." This would be no mean harvest. I may be wrong, but I think it has been possible to see the stirrings of this new spirit during this last decade.

* * *

The recent death of Miss Moberley recalls an incident which illustrates well our changed attitude to non rational experiences. Thirty six years ago¹ Miss Moberley and Miss Jourdain were on holiday in Paris. They were women of high intelligence and the successive principals of St. Hugh's College, Oxford. Neither of them had any specialist knowledge of French history. They were walking one afternoon in the grounds of the Petit Trianon at Versailles when they were met and addressed by persons wearing the costume of 1789, some of those persons were visible to one of them, others to both. They passed by woods that no longer exist, saw a man sitting by a kiosk which has disappeared long ago, and were accosted by a footman who emerged from a door in the palace which, through the destruction of a staircase was built up nearly a hundred years ago. At the time the ladies noticed nothing peculiar in their experiences beyond a strange feeling of depression. It was only when discussing some weeks later the events of the afternoon that they became impressed by the strangeness of what they had seen. Patient research in the years that followed revealed that the geography of the place, as they described it, was as it had been in the days of Marie Antoinette, that the lady seen by Miss Moberley was Marie Antoinette herself, that the dresses were in detail what they would have been in 1789. There is much quietly described corroborative detail in the book, it makes fascinating and unusual reading.

It is not difficult to imagine what the general reaction to this recital would have been thirty years ago—but to day J. W. Dunne, in an introduction to the book writes, "Hence, if Einstein is right the

¹ "An Adventure" By C. A. F. Moberley and F. F. Jourdain London 1931

contents of time are just as real as the contents of space. Marie Antoinette body and brain is sitting in the Trianon garden now. What does that now mean? It is a four dimensional now such as would be employed by a super mind which could perceive Marie Antoinette and you (who are reading this) as equally present to perception. A dreamer's attention can travel to and fro in the physicist's alleged four dimensional time. Granted this absorption in that particular part of the past, anyone who is capable when awake of mental time-travelling combined with telepathy would be likely to see what these two ladies saw through the eyes of any persons who walked in that garden in the year 1789.

* * *

This adventure has one curious interest for the physician. It resembles the sort of visual and auditory aura which sometimes accompany an epileptic fit. James Collier described thus the aura of a patient of his who suddenly found himself approaching a level-crossing in a picturesque village in high sunlight. Out of the little guard house on the farther side came a woman dressed in the conical beaver hat and scarlet cloak of the Welsh national dress, who greeted him with a smile. He hastened forward to meet her but found the gates rapidly closing upon him. As they closed but before they touched him he lost consciousness. In this case the hallucination was always the same in every detail and in each fit. Moreover both Miss Moberley and Miss Jourdain experienced an extraordinary depression during the incident which in spite of every effort steadily deepened. I am not suggesting that both these ladies had epileptic attacks with an identical aura and at the same moment, but would our physicist-philosophers regard an epileptic attack as an explosive escape into fourth dimensional time?

* * *

The rôle of the expert in human affairs becomes an increasingly important one. With its increasing importance comes a distressing tendency for the expert to pontificate outside his own subject. When I read statements taken from experts found wandering but still capable of speech I recall the remark of Hanoverian George as he surveyed his troops before battle: I don't know what they'll do to the enemy but, by God, they frighten me.

The expert who uses his reputation to buttress an opinion which does not rest on the foundation of his special knowledge sins against the light. Examples of this occur readily to the mind. Doctors err frequently in the law courts where the expert medical witness is easily tempted. One of the less offensive instances was that of a distinguished forensic pathologist who gave his opinion as to whether or not the sound of a falling body could have been heard by the driver of a car. It matters not at all whether the medical jurist was right or wrong because his evidence on such a matter is of the same value as the least intelligent layman's—neither more nor less. But to day the opinion of doctors is invited both individually and collectively on many matters outside a court of law which are of national social and political importance. An enumeration of such subjects would include malnutrition, population, the birth rate, birth control, noise, tests for drunkenness, road accidents, the campaign for physical fitness, corporal punishment, euthanasia, war and peace, and many another problem even when specific questions of public health are excluded.

If doctors are to express an opinion on these and kindred subjects there will be general agreement that they should abide by the rules governing the conduct of experts on such occasions—viz (1) they should have a specific contribution to make (2) this contribution should rest on facts within their own knowledge and that of their colleagues (3) if their opinion should not coincide with informed medical opinion it should be so stated (4) if the subject should be one on which they have no expert knowledge it should be made clear that they are expressing an individual opinion which is of equal value with the opinion of Mr Smith. Although no one will quarrel with these rules I think it could be shown if one had the time and a gift for patient research that doctors both individually and collectively have published on all the subjects mentioned above opinions which are no more than the expression of a personal bias. I recall two recent examples of this.

* * *

There is a suggestion as all my readers know that the level of the alcohol in the blood should be used as a test of incapacity to drive in persons charged with being drunk in charge of a car. Some years ago an eminent surgeon who is also an ardent temperance propagandist wrote to the *Times* a letter which introduced this subject for the first time to the general public. The *Times* obviously impressed with our colleague's surgical distinction printed his letter in the place of honour on the middle page and his readers were no doubt equally impressed by his propaganda on behalf of this test. They did not know for he did not tell them that while biochemical assays are sufficiently difficult to interpret in the courts of medicine in the courts of law they darken counsel and confuse judgment. They did not know nor did he tell them that as a test for driving incapacity such examinations have in the opinion of many doctors about the same value as the olfactory evidence of an anomic constable. Nor was he content with this but he popped nimbly over a neighbouring hedge into the lawyer's field and said that any man who refused to have such an examination made when charged with such a misdemeanour stood almost self convicted! This remark must have caused laughter in the Inns but terror in the public houses—which was perhaps what our temperance propagandist intended.

* * *

A well known physician wrote to the *Times* a few weeks ago insisting that the cause of gastric disorders in London busmen was an insufficiency of vitamin B in their diets. This I should take to be in flagrant disregard of rules 2 and 3 quoted above. Let the busman eat brown bread. Their ulcers would be prevented and we might infer the buses would quickly be rolling down Regent street again. Vitamin B not only cures constipation prevents intestinal cancer but it is also a dramatic solvent of industrial disputes. Next day to his great indignation but to my great delight, he was confronted by another gentleman also straying from his own field. A distinguished member of the advertising business (not let me hasten to assure the cynical of our own profession) replied to him in a letter which outlined concisely orthodox medical opinion on the subject.

Sir A B a physician of repute
Went out to settle Bism's bus dispute
Too lad. He met Sir Advertising Jim
Who without much ado did settle him

CORRESPONDENCE

THE OVER TREATMENT OF GONORRHOEA

To the Editor of THE LANCET

SIR,—Mr Nicholls's letter in your issue of March 20th was one that has long required writing, and I should like therefore to congratulate him on his courage in attacking an evil which we all recognise. I fear however that unless a miracle happens his voice will be as "the voice of one crying in the wilderness," for the root of the evil lies rather in the system of treating venereal disease than in the individuals practising it. He puts his finger on the weak spot when he says "gonorrhoea has been withdrawn from the circle of hospital life and wedded to syphilis (an unhappy and incompatible match), and they live apart in a dark and uncritical world of their own."

The trouble is the training of the venereal specialist, and it is a curious irony of fate that this odd hybrid, whom Mr Nicholls so justly condemns, should have been made possible by John Hunter, the greatest name in British surgery, and the greatest name on the staff of Mr Nicholls's own hospital. Hunter, experimenting on himself in 1767, persuaded the world that syphilis and gonorrhoea were the same disease. It was therefore logical for one man to specialise in this disease. Philippe Ricord exposed the fallacy in 1837, yet we still talk about "venereal disease" in the singular, and we still seem to think that two dissimilar diseases—one, according to Osler, requiring the widest possible knowledge of internal medicine, the other obviously needing an expert acquaintance with urology—can be adequately treated by a junior official with very limited experience of either.

Venereal disease has always been the cinderella of medicine, and the only hope of rescuing it and its exponents from this lowly position is to restore syphilis to general medicine and add gonorrhoea to urology, the branch of surgery to which it logically belongs.

At present the treatment of venereal disease is a blind alley occupation. Those in charge have no chance of promotion to the medical or surgical staff of their respective hospitals. They have no incentive to enlarge their horizon, and as a consequence the following is the sort of thing that happens. A patient was treated for six months with sounds as a case of stricture. At the end of this period, getting no better, he was seen by a urologist who passed a cystoscope without any difficulty, and discovered he had cancer of the bladder which by this time had become inoperable. Anyone with the most elementary knowledge of surgery could not have committed such a tragic blunder, yet it happened at one of our best known venereal clinics. It is inadequate surgical training that makes possible the over-treatment by irrigation and the mangling of urethras with dilators that one now sees going on in so many of our venereal clinics. Such treatment would not be possible in any clinic where men with real surgical minds are in control. A man professing to be an expert on gonorrhoea ought to be able to use a cystoscope, do an internal urethrotomy, or operate on a prostatic abscess instead of allowing it to burst. He ought to be able to do a salpingectomy or cure a cervical tear when necessary.

How many of our so-called venereal experts are capable of performing these simple operations? Hardly any. And the reason is that they have been

trained on entirely wrong lines, acquired the mental outlook of the old dead and gone regimental medical officer instead of that of the urologist. Is it too late to hope that the treatment of gonorrhoea may be rescued from the dead hands of this "service" tradition, and allowed to develop on sound surgical lines?

I am, Sir, yours faithfully,

J. JOHNSTON ABRAHAM

Queen Anne-street, W. June 14th

DIAGNOSIS AND TREATMENT OF GASTRIC AND DUODENAL ULCER

To the Editor of THE LANCET

SIR,—I should like to suggest to Dr Duncan Leys that he should use a really delicate test for occult blood for a year. I am convinced that he would never go back to the rough methods used in most English laboratories. There is no analogy between the Fehling reaction for sugar and the tests for occult blood, because normal urine contains traces of sugar, so that a test is required which gives a positive reaction only with a percentage of sugar greater than normal. But normal stools contain no blood if there is none in the food, so the more delicate the test the more valuable is the information it gives. Every year I see at least half a dozen cases of cancer missed and numerous patients with an active ulcer said to be healed because a report of no occult blood has been received, although when the examination is repeated with Dr Ryffel's technique¹ it is positive. Properly done, a positive occult blood test is of more value than a negative X-ray examination, as it is positive in every case of cancer of the alimentary canal, and it rarely becomes negative with gastric and duodenal ulcers until after the nodule has disappeared. It therefore shows the need for further investigations in suspected cases of cancer of the stomach and colon when the first X-ray report is negative, and it gives the best indication we have as to when an ulcer has healed—short only of gastroscopy in the case of gastric ulcer.

The guaiac test has the great advantage over the benzidine test in giving no reaction with iron, whereas the latter is useless in the many cases of ulcer in which the presence of anaemia calls for the administration of iron, and the spectroscopic examination of a faecal extract for haematorporphyrin and acid haematin gives additional information of the greatest value.

I am, Sir, yours faithfully,

ARTHUR F. HURST

New Lodge Clinic, Windsor Forest, July 14th

SULPHÆMOGLOBINÆMIA AND METHÆMOGLOBINÆMIA AFTER SULPHANILAMIDE

To the Editor of THE LANCET

SIR,—In view of the communication of Dr Paton and Dr Eaton in your issue of May 15th and their letter published on June 5th, the following case in which sulphæmoglobinæmia and methæmoglobinæmia developed after the administration of Prontosil appears to be of interest.

A man aged 41 was admitted to Guy's Hospital on March 11th, 1936, for a chronic empyema of three months standing. A rib was resected on March 18th and 3 pints of pus were drained off. The pus was sterile on culture. The patient made satisfactory progress until March 27th

¹ *Ide Price's "Medicine"* 4th ed., 1933 p. 605

when he developed an acute tonsillitis. Hemolytic streptococci were grown from a throat swab. On March 31st the patient had a venous thrombosis in the left leg and on April 3rd he began to have rigors. On April 4th he developed arthritis of the right wrist and a blood culture at this date gave a heavy growth of hemolytic streptococci. On April 6th the hemoglobin was 58 per cent and the white count 11 000 cells per c.mm.

From April 6th to the 13th 5 c.cm. of protosol was given intravenously each day and 2 tablets of protosol per os t.i.d. After April 13th no further injection was given but the patient continued to take the tablets per os for a further few weeks. On April 9th the temperature remained normal and the patient was very much better. The white count rose to 22 000 cells per c.mm. and a blood culture on April 15th was sterile. During the severe stages of the illness the patient had a livid complexion, but this was attributed to the septicaemia.

Progress continued to be satisfactory until May 16th when the temperature began to rise again up to 100 F. each day. On May 20th the patient complained of pain in the right groin and later this spread to the knee. On examination there was evidence of psoas spasm and tenderness in the right groin and right loin. The presence of a psoas abscess was suspected. On June 10th treatment with protosol tablets was recommenced. The patient then became obviously cyanosed the lips ears and facial venules being of a leaden blue colour. There was no dyspnoea and the patient appeared unusually well in himself. Exogenous cyanosis was diagnosed and on June 15th Dr J. H. Ryffel examined the blood and reported: "The laked blood shows an absorption band in the red which gets smaller but does not disappear on addition of ammonium sulphide. The band appears to be due to a mixture of methemoglobin and sulphemoglobin."

Besides protosol the patient had been having amongst other drugs magnesium sulphate and phenacetin. On June 14th all these drugs were omitted. On June 21st the hemoglobin was 27 per cent. At this date the patient's colour had much improved although the cyanosis was still marked. Dr Ryffel again examined the blood on June 26th and reported: "The blood still shows a well marked band in the red not altered by ammonium sulphide. Therefore sulphemoglobinemia only. In the meantime oedema developed in the right loin and right thigh and it was thought desirable to perform an exploratory operation. In view of the patient's general condition he was given a blood transfusion of 300 c.cm. on June 26th and a second transfusion of 500 c.cm. on June 30th. On July 2nd a large psoas abscess was drained in the thigh. Hemolytic streptococci were grown from the pus. Following this the patient made satisfactory progress culminating in his discharge from hospital."

I am indebted to Dr E. P. Poulton under whose care the patient was and to Dr Ryffel for permission to publish this case.

Methemoglobinemia and sulphemoglobinemia in the same patient has also been described by L. P. Garrod (*Quart. J. Med.* 1925 19 80). In this case the methemoglobinemia was believed to be superadded to the exogenous picture by the excessive use of headache mixture and cleared up immediately on the discontinuation of the drug.

I am Sir yours faithfully

J. A. J. HAMMOND

Guy's Hospital, B.E. June 9th

TREATMENT OF ACUTE OSTEITIS

To the Editor of THE LANCET

SIR,—Owing to absence from home I have only just read Mr Saint's interesting lecture on Acute Osteitis published in your issue of May 22nd and 29th. His reference to a contribution of mine on the subject calls for some comment although I cannot here discuss all the points raised. If anyone who is interested will refer to my article they will find that two of the three patients who died were suffering

from virulent septicaemia and that immediate operation was undertaken because at that time I did not realise the value of delay in such cases. I am not suggesting that with expectant treatment the outcome would have been different but I do wish to emphasise that the initial septicaemia is by no means always mild, as Mr Saint appears to suggest and that a few days pre-operative treatment may be a life-saving measure. In this connexion there is no one who can find the records of Mr Tyrrell Graves' cases! They might be of great value. Since my article was published I have treated nine more cases on similar lines without a death.

On the exact extent of the local operation I do not wish to dogmatise but I am convinced that harm has been done in many cases by too radical interference. Our first object in a disease with a mortality so potentially high should be to save life. The principles of treatment should be operation at the right moment which in my opinion should not be within a few hours of diagnosis, adequate fixation of the part and infrequent dressing which can be secured by using B.I.P.P. As regards the latter agent I am in whole-hearted agreement with Mr Saint having used it constantly after my first trial of it in Mesopotamia in 1916.

The subject of acute osteomyelitis has been up for discussion at medical meetings on many occasions. I would suggest to Mr Saint that a statistical investigation by the Association of Surgeons into the results of various methods of treatment, would be of considerable interest.

One final question can Mr Saint give us the approximate duration of illness in each case before he operated?

I am Sir yours faithfully

Northampton June 14th

C. C. HOLMAN

A DEBT OF HONOUR

To the Editor of THE LANCET

SIR—The Southern Spanish Relief Fund whose hospitals for children in Almeria suffered severely in the recent German bombardment appealed through your columns on March 13th for the voluntary assistance of doctors. Five applications in all were accepted after irreproachable references from colleagues had been received and after two of the applicants had been interviewed by a leading London doctor. Four of these five had successively to be repatriated in their own and our interest leaving us with liabilities which amount in all to over £200.

I honour the kindly reluctance of reference writers to give information that will prevent acceptance of a colleague's application but I hope that your readers may feel the same kindly reluctance to let a compatriot suffer serious loss thereby. For I feel it impossible to charge expenses of the character incurred to a fund raised for the Spanish wounded women and children. Failing help they will have to be met from a private purse already depleted by running and raising money for the hospital. Any subscriptions for the relief of this personal liability should be marked medical and addressed to I. T. Marling Esq. F.C.S. The Hon. Treasurer Southern Spanish Relief 10 Old Jewry F.C.2. Should they exceed the total liability subscribers will be consulted as to the refund or redistribution of the balance.

I am Sir yours faithfully

GEORGE YOUNG

Director of British Hospitals, Almeria and Murcia

PREGNANCY TOXÆMIA

To the Editor of THE LANCET

SIR,—I have read with some interest Dr Theobald's paper in your issue of June 12th. Important as minerals and vitamins are to the economy—even in the non pregnant—I do not think their exhibition in pregnancy plays the part which Dr Theobald would have us believe. From his own account these substances do not prevent the occurrence of the pregnancy toxæmia, for signs appeared in 13 out of 50 cases treated. Since the incidence was much greater—more than twice as great—in the 50 not so treated, suggesting some effect, we must either conclude that the doses in the first 50 were insufficient, or that some other cause than a deficiency of these substances is at work in the production of the toxæmia of pregnancy.

Unfortunately, in his present paper, Dr Theobald does not consider other possible causes. He talks of the different protective substances associated with toxic symptoms. Attributing the difference in the incidence of "complications" in his two groups to the substances given in the one and withheld from the other, he asserts that the results of the dietetic treatment of these patients in the antenatal ward strengthen his assumption. "The symptoms," he says, "cleared up in every case." He believes, apparently, that these cases cleared up because of the dietetic treatment, and because of that alone. But, presumably, these patients were kept in bed, if that were so, the effect of rest in bed, per se, finds no place in his argument.

I do not propose to dissertate here on the effect of rest in bed, it will be admitted that rest in bed has some effect—even in patients suffering from the toxæmia of pregnancy. But it does not matter whether Dr Theobald's patients were kept in bed or not, I know from my own experience that putting toxic patients to bed and feeding them on water only—and in restricted quantity (to begin with 1 pint, or 1½ pints per 24 hours) flavoured with a little lemon and given a little glucose—restores these patients to the normal, the oedema disappears, and presumably the blood pressure if raised goes down. I give them no especial vitamins and no calcium, yet they get well. The treatment is essentially physical combined with starvation. But to day, when every disease is attributed to some biochemical aberration, and the patient is treated by the exhibition of some tablet or capsule, I do rather wonder whether the effect of rest in bed will be allowed to be a physical one. But if rest in bed acts physically, how does it do so? I state categorically that rest in bed, per se, prevents the toxæmia of pregnancy. It is for your readers to answer how it does so.

In line with this we find that dietary deficiency in pregnancy occurs without the appearance of the pregnancy toxæmia. Anæmic pregnant women appear immune from the toxæmia of pregnancy. Truly, eclamptic women are anæmic, but that is a result of the visceral impairment, not the cause of that impairment. In the same way we see that postpartum hæmorrhage is never followed by postpartum eclampsia. How does venesection prevent eclampsia—whether ante or post partum? By producing an anæmia? By its chemical or its physical effect? The danger of removing too much blood postpartum is puerperal sepsis, not the toxæmia of pregnancy (e.g. eclampsia). Truly the biochemical ingredients of the blood are of importance, but not in the prevention of the toxæmias of pregnancy.

May I remind your readers that man consists of a mass of cells, &c., that both the cells and the juices possess very definite physical qualities, and that not one of the vital functions goes on without the play of physical forces which the cells of the body engender, and that when these physical forces are insufficient or too great, physiological processes are disturbed, and interfered with. This is even so in the pregnant woman, it occurs irrespective of biochemical (vitamin) influences, it is a factor which those desirous of understanding the toxæmia of pregnancy and its prevention will be forced—by the *reductio ad absurdum* argument if by no other—sooner or later seriously to consider.

I am, Sir, yours faithfully,

Rugby, June 11th

R H PARAMORE

To the Editor of THE LANCET

SIR,—It is now over six years since I advocated in the *British Medical Journal* the continuous administration during pregnancy of calcium phosphate 15 grains three daily, together with a plentiful supply of green vegetables. I was and still am of opinion that the toxæmias of pregnancy are deficiency diseases.

The case for the continuous administration of calcium during pregnancy seems unanswerable. For nine months there is an enormous demand on the mother to provide calcium phosphate for the bones of the fetus, this demand has to be met in some way, either by an increased intake of calcium or by drawing on the mother's reserve of calcium, with disastrous consequences for both mother and child. Another well known fact is that there is a seasonal variation of the phosphorus and calcium content of the blood, the percentages being highest during the months of maximum sunshine, therefore during the winter, and especially the months following the winter, there is greater need of calcium than ever. This need for calcium coincides with the greatest incidence of eclampsia, according to Harrer of the New York Lying-in Hospital, who has shown graphically the incidence of eclampsia during ten years, and considers that the increased incidence in early spring is due to the cold and damp weather prevailing at that time (Williams's "Obstetrics").

We know that in chronic parenchymatous nephritis the calcium content is low, that nephritis and oedema have been successfully treated with calcium, and that calcium has a sedative effect on the nervous system and diminishes the permeability of the blood vessels, and we know that in some cases of uræmic convulsions the blood calcium is low. We know also that one cause of tetany is calcium deficiency, and curiously enough it has been noted that epidemics of tetany usually occur in the spring. These and many other reasons seem to indicate that large doses of calcium, in addition to the vitamins, are required to make up the maternal deficiency, and to prevent the so called 'toxæmias of pregnancy'. If in spite of these measures the patient shows signs of hyperemesis I would advise, in addition to the calcium phosphate and vitamins, giving dilute hydrochloric acid, preferably in the form of betaine hydrochloric and pepsin, of which there are several preparations on the market.

I am a little disappointed that this treatment has not been tried out on a large scale before. I had hoped that someone would have given it an extended trial before now, and I trust that Dr Theobald's interesting paper will lead to a real and thorough test.

I am, Sir, yours faithfully,

Isle of Anglesey June 11th

J J. MOIR

MOYNIHAN MEMORIAL

To the Editor of THE LANCET

SIR,—The board of the General Infirmary at Leeds realise that the greatest memorial to the genius and work of the late Lord Moynihan must always be advancement in the art of surgery which he did so much to promote. They feel, however that it is their duty and privilege to perpetuate a record of Lord Moynihan's work for surgery and his labours in and for the General Infirmary at Leeds by the erection within its walls of a suitable memorial. Already a ward has been named the Moynihan Ward, but much more than this is clearly required. The board have appointed a committee to submit and carry out a suitable scheme and on behalf of this committee I am able to state that the sum of £750 has already been received. More than this is needed if the memorial is to be adequate and I am authorised to invite subscriptions from medical and lay sympathisers. It is suggested that one guinea would be a suitable amount, though more or less would be very acceptable.

Subscriptions should be forwarded to the General Infirmary at Leeds in the name of the Moynihan Memorial Fund or to myself. They will all be very gratefully acknowledged.

I am Sir yours faithfully

CARLTON OLDFIELD

Chairman Moynihan Memorial Committee

June 14th.

BICENTENARY OF THE BRISTOL ROYAL INFIRMARY

To the Editor of THE LANCET

SIR,—Sunday next June 20th marks the completion of 200 years work at the Bristol Royal Infirmary: for on this day in 1737 the out-patient department was opened for the reception of patients. though the formal opening did not take place until December of that year. We feel that the bicentenary of the oldest provincial teaching hospital in the Kingdom is a matter of more than local interest and importance. To mark the occasion a carnival is being held at the Clifton Zoo from July 7th to 10th. The formal celebrations will take place later in the year probably early in October when it is hoped that former students and others associated with the infirmary will make a special effort to be present.

I am Sir yours faithfully

E. WATSON WILLIAMS

Hon Secretary Bicentenary Celebrations Committee

Clifton Bristol June 14th

THE LANCET 100 YEARS AGO

June 17th 1837 p 448

From an answer to a Correspondent

Corporal Ward.—Were it a necessary consequence of the inversion of images on the retina that the mind should perceive them to be upside down then it might be correct to speculate on the cause of their being recognised in an upright state. But the upside-down result has not yet been proved to be inevitable. Every theorist however appears to have forgotten this. Be the image pictured in whatever position it may on the retina, the mind clearly recognises the lower end to be the lowest and the upper to be the highest but why it does so it is an unnecessary to debate as the question how the mind comes to be sensible of the representation of an object exists on the retina at all. The opinion that the "change of flanks" is effected by the decussation of the optic nerves is not new but has often before been hazarded. Experiments and not conjectures are needed in physiology.

A NEW MENTAL HOSPITAL

ON Monday last Sir Kingsley Wood, the Minister of Health opened the new mental hospital at Runwell Essex which has been provided jointly by the county boroughs of East Ham and Southend-on-Sea. Erected at a cost of £650 000 it has been planned so as to combine all the previous advances in mental hospital design including a separate admission hospital four research laboratories a general library and a recreation hall equipped with gymnastic apparatus. There is also a new feature—a detached closed unit for disturbed cases.

Everything has been done with the aim of convincing both patients and public that nervous and mental disease must be treated with the same intensive care scientific means and human understanding as any physical disorder. With a site of 600 acres between Wickford and Rettendon (about 24 miles from East Ham and 12 from Southend) the buildings have been placed on a slight slope open to the south and sheltered by rising and well wooded ground on the north. They are widely spaced and in this way it is hoped that an atmosphere may be engendered of light and airy buildings without obtrusive restraint, and with a freedom from the institutional feeling. Wide verandahs with large solarium form a feature of the patients' units, and airy rooms with french windows enable them to feel that they are in a sanatorium rather than a great institution.

Occupational therapy is considered a very important part of the treatment to be provided and provision has been made for teaching many different handicrafts as well as upholstery printing tailoring boot-repairing metal work and carpentry. The admission hospital is built in a single storey and affords every facility for open air treatment. In this unit is the X-ray department the pathological and biochemical research laboratories a department of hydrotherapy and laboratories of experimental psychology and clinical pathology. Two detached villas at a distance from the other buildings, are for voluntary patients suffering from the milder forms of mental disorder; they allow of as much freedom and privacy as possible and they are described as the first of their kind in a public hospital. Units for quiet and employable patients are provided with large gardens and are connected by covered ways with the occupation therapy shops. There are also three parole units for patients not needing much supervision and able to enjoy more freedom both inside and outside the grounds. They have easy access to the kitchen garden laundry and farm where a certain number of the patients will be employed. Finally there is the closed unit situated well away from the other buildings accommodating 60 male and 100 female patients suffering from the more severe forms of mental disorder. This is planned to be unlike the old fashioned refractory block and will have a large garden.

The hospital has room for 1010 patients and forms a community of perhaps 1400 people with 25-30 separate units. The physician superintendent is Dr Rolf Ström Olsen the deputy superintendent Dr S. M. Coleman the senior physician Dr S. L. Lawt and the assistant physicians Dr M. B. Brody and Dr P. P. Haldane. There are also two resident house physicians. The visiting consultant staff are: Dr T. Rowland Hill Mr Podney Maingot Dr I. Vitenzon, Mr J. Lyle Cameron Dr H. L. Bonnell Mr C. G. Talbot Dr C. White Phillips and Mr W. Milton Bull. The architects of the new building are Messrs Fleck and Sutcliffe.

BRITISH ASSOCIATION OF RADIOLOGISTS

At a meeting of this association held at the British Institute of Radiology on June 11th and 12th, under the presidency of Prof J M WOODBURN MORISON, the Skinner lecture on the

After-care of Patients Suffering from Cancer of the Breast

was delivered by Dr F HERNAMAN JOHNSON. After drawing attention to the increase in the death-rate from carcinoma of the breast during the last thirty years, the speaker gave it as his opinion that little advantage was likely to accrue from the adoption of heavy dosage methods of radiation therapy in this field, and that radiation therapy should be employed primarily as a palliative measure following radical surgery. The objects to be attained in palliation were first to free the patient from any external signs of the growth, secondly to relieve pain and discomfort, thirdly to delay the onset of and, if necessary, treat metastases, and lastly to treat the patient from a psychological point of view. In this respect attention was drawn to the value of surgery where the patient was more likely to feel that the growth had in fact been completely removed. Reference was made to Dr A T Todd's work, but Dr Hernaman Johnson did not consider this suitable for hospital patients. Referring to biochemical tests he was of opinion that the differential sedimentation rate, while not of value in diagnosis, was useful in assessing the response to treatment. Isolated skin recurrences should, he thought, not be regarded as of grave importance, heavy dosage should be employed locally. Axillary recurrences should be removed surgically, while supraclavicular gland metastases should be dealt with by heavy doses of X ray therapy. Metastatic deposits in bones were worth while treating, and in such cases Todd's method should be employed. Thoracic invasion rarely responds and the prognosis with liver metastases should be regarded as quite hopeless.

Wave-length in Radiotherapy

Mr G F STEBBING, opening a discussion on wave length as a factor in radiotherapy, emphasised the fact that in this form of treatment results were obtained only when the dosage was carried to a level which produced a fairly severe reaction on the skin, and that all factors which might contribute to a lessening of this reaction were worthy of consideration. It was almost universally accepted that the same physical dosage measured in röntgens (r) produces less normal tissue damage when delivered by radiation of short wave length. Despite this lesser biological response of the normal tissues Mr Stebbing was of opinion that so far as malignant cells were concerned the reverse was the case and that using short wave length rays a more lethal effect on the tumour was obtained. This view was based primarily on the belief that the action of the radiation on the tumour cells is direct and not through the tumour bed. In addition to this "selective" action the use of short wave length rays as produced by higher voltages resulted in greater penetration and so an improved depth dose which, though numerically not of a high order, was in many cases of very great value. Thus an absolute gain of 5 per cent per field resulted in a total gain of 30 per cent if six ports of entry were employed as in many cross fire methods.

Dr DOUGLAS WEBSTER, on the other hand, while admitting that the use of higher voltages enabled a greater depth dose to be obtained, pointed out that a similar result could be obtained by the use of greater treatment distances. He did not consider that there was any selective or specific action in relation to wave length, and in support of this view he pointed out that from the physical point of view ionisation effects did not run parallel to the wave length of the radiation and that, from the practical aspect, the measurement of the r at the higher voltages was a matter of some difficulty. On the biological side he quoted a number of experiments in which the employment of radiation generated at widely different voltages had failed to produce any different response on the part of the biological medium. On clinical grounds there was, as yet, no concrete evidence to support the view that better results were obtained by the use of higher voltages and that clinics employing X rays generated at potentials of 600 kv had not produced results superior to those obtained at 200 kv.

Dr RALSTON PATERSON, supporting Dr Webster, was of opinion that short wave length rays were, as a rule, to be preferred since their use entailed less skin reaction for the same measured dosage. This advantage, however, he considered to be due not to any specific or selective action on malignant tissue but to some physical factor as yet undetermined and possibly related to a defect in our present measurement methods.

Dr STRUTHERS FULTON did not consider that radiation effects were due to any specific or selective action. Clinically similar and equally satisfactory results were obtained in skin malignancy by the use of long wave length X rays on the one hand and gamma rays on the other. The fact that with X rays these results were obtained at relatively lower dosage levels as measured physically in röntgens tended to support the view held by Dr Paterson that our present methods of measurement might, in time, require to be revised.

Dr R E ROBERTS, arguing against there being any selective action, pointed out that if long wave length rays produced a greater effect on the skin it was reasonable to assume that they would also produce a greater effect on tumour tissue.

Dr F ELLIS cited a number of clinical and biological experiments from the literature, all of which tended to show that no selective action in relation to wave length did in fact exist.

Mr STEBBING, replying, pointed out that skin tumours were, as a rule, sensitive, and that care must be exercised in drawing deductions from this material. With deep seated tumours the difficulty was greater and it was in the treatment of such cases that the value of short wave length rays was most apparent.

Low Voltage Near-distance X Ray Therapy

Dr S B ADAMS, after outlining the particular merits of this form of treatment, proceeded to describe two special applicators which had been devised at the Royal Cancer Hospital with a view to providing a more homogeneous distribution of energy on the skin surface than that obtainable with the standard applicators. He discussed the question of dosage, illustrating his remarks by slides of clinical subjects successfully treated by this method. Clinical and biological problems in relation to the factors of time and intensity were being investigated, but it was as yet too soon to put forward any definite results.

Dr J F BROMLEY considered the possibilities of the method in the treatment of lesions in the mouth and in carcinoma of the rectum. The particular merit of this method in the treatment of skin malignancy in the region of the eye was demonstrated by a series of slides showing clinical results. Dr Bromley also briefly outlined certain biological experiments on which he was engaged.

Prof MORISON emphasised the importance of considering the dosage at the tumour level. The profound effect which distance has in modifying this was graphically demonstrated as was, also the comparatively small gain in depth dose associated with the use of higher voltages. An interesting table was shown comparing from the point of view of energy output and distribution radiation from a radium bomb a radium applicator and an X ray tube operating at 200 kv and a short distance X ray tube operating at 60 kv. Prof Morison discussed the possible difference in biological response to split dosage, continuous and massive methods of treatment. During treatment the tissues gradually changed in their sensitivity to radiation. Tumours tended to become radio resistant and he was therefore experimenting with a method whereby the daily dose was gradually increased throughout the period of treatment.

Dr R McWHITTER thought that similar results could be obtained by the employment of a tube operating at the 200 kv level. He had further found the single day massive dose method quite satisfactory for the treatment of skin malignancy.

Dr FULTON was of opinion that the near distance X ray therapy plant provided something which could not be duplicated by any other apparatus at present available. While approximating in energy distribution to a radium plaque it gave a very much higher output. On the other hand a high voltage X ray tube while providing a high output, gave a more profound depth dose effect. Two points had to be borne in mind in using the short distance X ray tube. First the depth dose was small and for this reason he felt that it should be used with discretion in the treatment of tonsillar lesions and secondly, the energy distribution is such that it falls off rapidly towards the edge of the field. This fact must be borne in mind in treating skin malignancy and a correspondingly wider area be subjected to radiation. Short distance X ray therapy had taught us two important lessons. The first of these was that permissible dosage is closely associated with the size of the field irradiated and with small fields it was possible to administer doses measured in r similar to those given by radium. The second point was that dosage is also related to volume of tissue irradiated and here we find that as a result of the superficial distribution of energy in the tissues it is possible to deliver higher doses with the short distance X ray tube than with an X ray tube generating rays of much shorter wave length but operating at a greater distance and so irradiating a larger volume of tissue despite the fact that the ports of entry may be similar in size.

Ventriculography

Dr ERIC LYNNHOLM of Stockholm gave an address before a large audience on radiological experience in ventriculography based upon 800 ventriculograms examined by ventriculography and cephalography. The use of the method was he said increasing. In Stockholm air was now solely employed as the contrast agent; with refined technique it would show all the details which could be elicited by opaque

media the use of which had proved inseparable from risk. Arteriography was only employed when a vascular lesion was suspected. For radiography he used an apparatus whose constant focal distance at all angles enabled him to make a three-dimensional reconstruction of the ventricular system. When the reconstruction was superimposed upon an anatomical chart slight deformities were readily appreciated and the lesions could be accurately localised. He demonstrated his new type of grid constructed entirely of metal which absorbed its own secondary and tertiary radiation. The grid lines were so fine as to be almost invisible and the thickness could be adapted to varying conditions and objects. The ventriculographic appearance of supra tentorial tumours he divided into three groups, each with its characteristic picture:—

(1) *Concealed tumour* causing lateral displacement with tilting of the upper end of the septum pellucidum away from the tumour and flattening of the upper angle of the lateral ventricle of the same side. The higher the tumour the greater the amount of tilting of the septum.

(2) *Tumour situated laterally* at the level of the Sylvian fissure causing lateral displacement without tilting of the septum or indentation of the outer angle.

(3) *Temporal tumours* the typical picture was a lateral displacement with a characteristic angulation of the septum and third ventricle to one another. This angle was open towards the side of the tumour. The lateral ventricle on this side was narrowed, drawn out into a point inferiorly and showed an indentation on its lower outer side. In this group it was essential to observe the temporal horn. The direction in which it was displaced would determine whether the tumour was superficial or deep.

Filling of the third ventricle of the aqueduct and of the fourth ventricle was accomplished by special techniques. Characteristic filling defects were then observed with intrinsic and extrinsic tumours of the third ventricle. It was sometimes possible to determine the operability of intraventricular tumours by observing whether they were completely surrounded by air or attached to the ventricular wall. He demonstrated examples of very small cysts at the foramen of Monro—an important type of which he had seen four cases—tumours of the anterior middle and posterior parts of the third ventricle and pineal tumours. Posterior third ventricle tumours could not always be distinguished from one another. The pinealoma gave a well-defined filling defect with more or less complete filling of the supratentorial recess. Calcification in the tumour did not necessarily signify that it was a pinealoma. Four such tumours had proved to be gliomata and one a tuberculoma. Tumours of the lamina quadrigemina were often hard to distinguish from posterior tumours of the third ventricle; in some cases both regions were invaded. If the ventricular defect were small in comparison with the degree of displacement of the aqueduct the tumour was likely to be quadrigeminal. Careful observation of the aqueduct gave valuable indications. Quadrigeminal tumours displaced it towards the clivus but not laterally. Upper vermian tumours caused early compression of the aqueduct and in the lateral view have a typical picture—namely an angulation of the supratentorial part of the aqueduct, the peak of which was directed backwards, together with a bowing of its infratentorial part and of the fourth ventricle downwards and forwards unaccompanied by any lateral displacement. This deformity did not occur with inflammatory stenosis. Tumours of the cerebellar hemispheres caused bowing of the aqueduct towards the base with lateral displacement. They rarely obliterated

the cavity of the fourth ventricle. Tumours of the lower vermis pressed upon the lower part of the fourth ventricle which, together with the aqueduct, was dilated. Angulation of the aqueduct was rarely seen. Intraventricular tumours, if large, might completely obliterate the cavity of the fourth ventricle. If small, they could be outlined a rough or irregular outline indicated a papilloma. Ependymomata and medulloblastomata showed smooth surfaces.

Cerebellopontine angle tumours displaced the aqueduct dorsally and towards the opposite side, and often caused a depression of the lateral wall of the fourth ventricle. Pontine tumours also displaced the aqueduct dorsally, but lateral displacement did not occur. Dorsal displacement of the aqueduct with flattening of the floor of the fourth ventricle had been observed in a few cases of meningioma of the olivus.

Dr E. W. TWING, proposing a vote of thanks, stressed the personal element in Dr Lysholm's investigations. The brilliant results which he had demonstrated resulted from the concentration of the cases in one centre, and from the concentration of the best brains upon that material. Routine radio-

graphy could not obtain equivalent results. Every case involved careful and prolonged personal study.

Short Papers

Dr H. W. A. POST outlined the technique and normal and pathological salpingographic appearances in the uterus and tubes.

Dr E. ROHAN WILLIAMS indicated the value of urography, ascending and intravenous, in demonstrating the physiological dilatation of the renal pelvis and ureters in pregnancy, and the cystographic diagnosis of placenta prævia.

The use of lipiodol in the localisation of spinal tumours was described by Dr H. M. WORTH, who gave details of the technique and showed a number of cases diagnosed by lipiodol introduced by the lumbar and cistern puncture respectively.

Dr M. H. JURE read a paper on cases of suprarenal tumour, and described the clinical and radiological appearances in the Pepper and the Hutchinson types of neuroblastoma of the adrenal medulla. He drew attention to certain characteristic bone changes in the latter type.

PUBLIC HEALTH

Refresher Courses

THE life of a medical officer in any branch of the public health service is increasingly hard. The enlarging scope of the public health department is calling for a very high type of medical officer who requires, in addition to medical knowledge, personal and social qualities to which Sir Kingsley Wood alluded at the last annual dinner of the Society of M.O.H.s. The imagination of the advertising agent, the zeal of the missionary, the patience of Job, the hide of the hippopotamus were among the qualifications, "coupled," he added, "I suppose, with medical knowledge." On the same occasion Dr Ernest Ward spoke of the initiative taken by the Society in promoting higher education, and its hope for the advice and co-operation of the Ministry of Health in arranging for it. The organisation of short post graduate courses for the various classes of medical officers employed by local authorities was the first step suggested. No time has been lost and a circular now issued by the executive secretary of the Society to local authorities tells of provisional arrangements for a series of refresher courses. Three such courses are announced:

- (1) Sept. 28th to Oct. 1st, at Cardiff, for medical officers of health, limited to 40.
- (2) Week beginning Nov. 8th, at Manchester, for school medical officers, limited to 30.
- (3) Early in 1938, a course in infectious diseases, in London, limited to 20.

No sanction, it seems, is required for expenditure incurred on these courses by local authorities which have the conviction that they will get an adequate return for their money in the maintenance of efficiency on the part of their staff. The Board of Education has also expressed general agreement with the principle and a syllabus of a school medical course is now being drawn up. An attendance fee of two guineas will cover the central organising expenses and local fees for each course, and prompt application is desirable in view of the strict limitation of numbers. No other commendation of the scheme is necessary than a mild expression of surprise that it has not been put into execution before. All honour to the present initiative.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 5TH, 1937

Notifications—The following cases of infectious disease were notified during the week: Small pox, 0; scarlet fever, 1517; diphtheria, 925; enteric fever, 39; pneumonia (primary or influenzal), 652; puerperal fever, 38; puerperal pyrexia, 124; cerebro-spinal fever, 17; acute poliomyelitis, 3; acute polio-encephalitis, 1; encephalitis lethargica, 5; relapsing fever, 2 (Leatherhead, Wharfedale R.D.); continued fever, 1 (Stockport); dysentery, 33; ophthalmia neonatorum, 115. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on June 11th was 2902, which included: Scarlet fever, 736; diphtheria, 830; measles, 91; whooping-cough, 446; puerperal fever, 22; mothers (plus 13 babies), encephalitis lethargica, 282; poliomyelitis, 2. At St. Margaret's Hospital there were 24 babies (plus 13 mothers) with ophthalmia neonatorum.

Deaths—In 123 great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 7 (0) from measles, 0 (0) from scarlet fever, 16 (0) from whooping-cough, 29 (4) from diphtheria, 46 (13) from diarrhoea and enteritis under two years, and 17 (4) from influenza. The figures in parentheses are those for London itself.

Four persons died at Birmingham of diphtheria and 2 each at Darlington and Worcester. There were 7 fatal cases of diarrhoea at Willesden and 4 at Leeds.

The number of stillbirths notified during the week was 313 (corresponding to a rate of 41 per 1000 total births), including 52 in London.

NEW HOSPITAL AT IVER—The new Iver, Denham and Langley Cottage Hospital will be opened on July 2nd by the Duke of Kent.

ROYAL EYE HOSPITAL, SOUTHWARK—This hospital is setting up a special committee to carry out research with a view to preventing injuries to the eyes. A museum of various devices intended to protect the eyes of industrial workers is being prepared and the committee is asking employers in South London to help in the campaign. Plans are being prepared for two additional wards and accommodation for extra nursing staff is to be provided. The cost of this which is the first part of the rebuilding scheme will be about £50,000.

PARLIAMENTARY INTELLIGENCE

THE HEALTH SERVICES

We have already summarised (p. 1430) some part of Sir Kingsley Wood's important statement on committee of supply on the health services. A few of his chief points remain to be noted. Advances he said, had been made in the treatment of child bed fever; the discovery that certain organic chemical compounds could reduce both the mortality from this disease and the incidence of complications had been of outstanding importance. The epidemic of enteric fever during the year at Bournemouth, Poole, and Christchurch illustrated once again the difficulty of ensuring a safe milk-supply otherwise than by pasteurisation where the milk was as in this case obtained from many sources and pooled before distribution. There had also been an increase in the proportion of mortality caused by some of the diseases whose prevalence was greatest among the older part of the population—that was he supposed a natural corollary of the decline in the great killing infectious diseases which used to take a heavy toll at all ages. The fixing of the date from which the new overcrowding provisions were to operate in particular areas was proceeding steadily; up to the end of March 1937 orders had been issued for fixing the appointed date leaving 52 to be fixed before the end of the year. The same date marked the end of the fourth year of the five-year programme of slum clearance. It had more than kept its promise. Four-fifths of that programme was represented by 106,000 houses and already the houses in submitted orders and purchase agreements exceeded that number. In April last he asked the maternity and child welfare authorities to review their arrangements for the supply of milk and meals to nursing and expectant mothers and young children. Replies from such places as Durham and Leyton had stated that their services were already complete; 33 authorities had reported that they were taking further action. During the past year he had urged on local authorities the importance of the fullest supervision over the health of children between the ages of 18 months and five years; at least 47 authorities had established special clinics for toddlers and 53 had arranged for the school medical services to be available for the younger children while 64 had appointed additional health visitors. He had been struck with the fact that although we had perhaps the finest social services in the world they were by no means fully utilised; he hoped in the autumn of this year in connexion with the Board of Education and the Central Council for Health Education to organise a national campaign to bring these health services more to the notice of the people. The keynote of the campaign would be *Use your health services*. They would get a real advance apart from the creation of new services in getting the people to utilise the services already in existence. The establishment of the Ministry of Health was the outward expression of Parliament that national health was of supreme and vital importance to the State and it was undoubtedly inspired by that new and wider humanity which was so prevalent to-day. Their aim must continue to be along those lines and it should be their desire to the best of their endeavour and capacity to make good health the birthright of every citizen. Certainly this could be said that the fight for good health could not be successfully conducted with a limited choice of weapons or on a narrow front. We must more than ever use the whole armoury which modern knowledge and medical science had given us and, if possible, broaden our front and deal not only with the specific diseases of the individual but more and more with the wider conditions—the environment, the occupations and the conditions of our people. Although there was much to accomplish it could be claimed that their efforts to build up a healthy nation had not been in vain.

CRITICISMS OF GOVERNMENT POLICY

Mr ADDON said that the block grant system limited the full play of the health services. He hoped that before it was too late the Minister would turn his mind to the planning of satellite towns and the location of industry otherwise when they had got over the immediate needs they would be faced with greater social problems and difficulties than in the past. The provision of public abattoirs was urgent.

Mr HAMILTON KERR said there was still little supervision of the child between the ages of two and five years. A definite health policy should ensure the regular medical supervision of every child up to the age of 16. In every local centre a properly organised file of the entire health history of each boy and girl should be readily available.

Mr LAKESHIRE contended that the necessity for a range of services which the Minister of Health controlled through local authority arose largely because of poverty and until poverty was dealt with we should not make true progress. Until children could get within their homes all the food necessary for them, we should not obtain that healthy virile youth population that we all wanted to see.

Sir FRANCIS FRIDLANDT dealt with the proposed additional ophthalmic benefits. There was he said a contest between the ophthalmic surgeon on the one hand and certain persons in the benefit societies on the other, as to what was the proper way of administering ophthalmic benefit. Obviously it was the most convenient thing to allow opticians to prescribe spectacles. But the departmental committee of 1922 had stated that an official register of opticians would tend to mislead the public into thinking that registered opticians were competent to discharge functions which belong only to those who have had a medical training. And the committee of 1927 said: "We are not satisfied that even those opticians who are most highly qualified in all other respects are sufficiently trained in this respect." Since 1927 the Association of Dispensing Opticians and the National Ophthalmic Treatment Board had been set up with inclusive charges well within the means of those whose family income did not exceed £260 per annum. That being so it was dangerous to allow additional benefit to be given by persons not qualified to find out the trouble at the back of the eye.

The case for satellite cities was agreed, but the difficulty was to get them put into effect by local authorities. It was not simply the establishment of a garden city here or there that was needed but the adaptation of the whole town planning movement in that direction. Meanwhile London was sprawling over the countryside. Some authority ought to take hold at once of the centres that were being made by the arterial roads. They would be the centres of the future communities and yet they were allowed to be taken up by petrol stations, breweries, public houses and caravans. He hoped the Greater London planning authority would be revived.

Sir FRANCIS went on to endorse a plea made by Mrs. Tate for a trial of the Scandinavian experiment in the treatment of venereal disease which had resulted in almost complete immunity from syphilis and a large reduction of other diseases. Here the position had been improved by the scheme of treatment centres but a large number of persons failed to pursue the treatment to the finish. Of the nearly 60,000 persons who last year attended V.D. clinics only 2,000 had the final tests of cure and nearly 20,000 ceased to attend before completion of their treatment. The first essential was education and the Ministry of Health ought to exercise pressure on the local authorities to keep up their quota of subscriptions to the Social Hygiene Council. They also had to consider seriously whether it was not

desirable to introduce some kind of compulsion either in notification or in ensuring completion of treatment. In Holland a voluntary system had given results better than ours, last year they had only 11 fresh infections per 100,000 of the population.

Mr J HENDERSON said that rheumatism was startlingly prevalent in large portions of industrial England. Several continental governments, backed up by the municipalities, had established a network of spas and clinics. In this country the leading hospitals were not dealing as they should with the manipulative treatment of this disease. He urged the Minister to organise a national service of municipal clinics in conjunction with the local hospitals.

Mr G GRIFFITHS urged the Minister to deal with burning pit heaps in mining districts, the fumes of which caused ill health. He commented on the absence in the report of anything about diabetes. We had in this country not fewer than 200,000 diabetics. A State insured person who was a diabetic got his insulin free, if the wife of such a person was a diabetic and was prescribed insulin, her husband had to pay anything from 10s to 18s a week for it.

Mr GODFREY NICHOLSON said that the Ministry were losing a sense of proportion with regard to maternal mortality. Too much stress was being put on antenatal treatment and not enough emphasis on the importance of skilled attention at the actual time of birth. An eminent gynaecologist had said to him that it was the specialist who should be looking after the actual confinement and the practitioner doing the antenatal care. The solution of the problems of maternal and infantile mortality lay in educating the whole population.

Miss WARD said that before embarking upon a campaign of "Use your health services" it was important to know whether there were adequate health services provided by every local authority. We should have a detailed survey of what health services were available to see whether local authorities were taking advantage of the powers which they could use, and whether they had the necessary finances to enable them to do so.

MINISTERIAL REPLY

Mr BERNAYS said that the figures in the latest annual report of the chief medical officer of the Board of Education were illuminating. They showed that out of 1,080,000 school-children examined, only 0.7 per cent were suffering from definitely bad nutrition and only 10.6 per cent from subnormal nutrition. There was also the encouraging fact—which gave the lie to the assertion about the deterioration of our national physique—that the general death-rate had fallen by one third during the last 25 years and that the death-rate from tuberculosis in children under one year of age had been reduced by a half in the same period. Malnutrition was a problem and the Government could legitimately claim that it had been tackled with energy and effect in the last few years. Reference had been made to the question of satellite towns. This question was dealt with by a departmental committee in 1924, which recommended the establishment of a National Planning Board. The main suggestion was that the larger local authorities should be encouraged, and, if necessary, compelled to make further outward development in the form of planned units outside the town, separated by adequate areas of open land. The instances of Welwyn and Letchworth garden cities had been cited, and the Government had been asked why we cannot apply experiments of that kind. These garden cities were started by public utility companies, and local authorities were doing much to secure the same objects. After all, town planning was planning to secure proper sanitary conditions, amenities, and conveniences. The increasing use of joint committees meant the extension of planning for larger units.

[Sir FRANCIS FREMANTLE: They are doing nothing to marry factories to residences, and that is the whole essence of the thing.]

Houses were being built, Mr Bernays rejoined under healthy conditions on the outskirts of the towns, and this policy would be continued and encouraged. With the existing organisations and working with the sympathy of established authorities, much was being and could be done.

Objection had been taken to the recognition of opticians as having power to prescribe for defective eyesight. While the Minister was satisfied that the ultimate ideal was that all persons should go to a medical eye specialist, he was satisfied that it would not be practical politics under present conditions to make this an invariable practice in all cases. The reasons were that the supply of qualified medical men was not sufficient to meet the needs of the whole population and that the people had not been educated up to recognising the advisability of this course in what they regarded as ordinary, straightforward cases of defective eyesight. The regulations, therefore, provided for either of the alternative courses being followed. Every insured person was required to visit his own insurance doctor before his application for ophthalmic treatment was granted.

PENSIONS FOR LOCAL GOVERNMENT OFFICERS

In the House of Commons on June 11th the Local Government (Superannuation) Bill was read a second time. In moving the second reading Sir KINGSLEY WOOD said that the main and general object of the Bill was to secure such a measure of uniformity as might reasonably be required in regard to the provisions to be made by local authorities for pensions for their staffs. It required provision to be made for the superannuation of all whole time local government officers and facilitated similar provisions by local authorities over and above that made by the general law relating to pensions for their other employees. The Bill brought the local government service in this respect into line with the long-established practice of the Civil Service and thus added another measure of protection in old age to a further section of the community. The present rate of contribution for both officers and servants was 5 per cent of their remuneration with an equivalent contribution from the local authority. It was estimated that in the present circumstances the rate of contribution needed to secure the benefits was in total 12 per cent for officers and 10 per cent as at present for servants, and the Bill accordingly proposed to increase the rate for new entrant officers by 1 per cent with a similar increase in the authorities' contribution. The Bill contemplated the minimum of interference with the various superannuation schemes established under local Acts, but if the main purpose was to be achieved it was essential that those schemes should be extended to cover, when they did not already do so, all whole-time officers.

DIFFERENTIAL TREATMENT

Captain ELLISTON expressed disappointment that no provision was made by the Bill for the optional grant of added years by local authorities in the case of their professional officers. He had been advocating that concession since 1922. He had some special experience of the conditions of service of medical officers. They were men who spent five or six years in acquiring their professional qualifications. At the end of that period if they were wise, or if they were fortunate, they took a period of service as house physician or surgeon in a hospital and then they had to acquire the further professional qualifications which would enable them to take a public health appointment. In view of the tremendously varied character and importance of public health work in these days, a medical officer who hoped to secure an appointment had to acquire special experience in a number of directions. He had to spend a period of residence in hospital, he had in most cases to spend a period in a tuberculosis sanatorium. He

had to acquire extra experience perhaps in diseases of women and children, and so on. That meant that he was usually 30 years of age or more before he could obtain his first appointment. Owing to this late entry at a higher salary level the contributions of these officers in relation to their pensions were much higher than those of non professional officers many of whom entered the local government service as soon as they left school. He (Captain Elliston) was hopeful that it was not too late for the Minister to consider whether he could make some concession in this matter and give local authorities the power if they so desired to add years, not exceeding ten to the number which professional officers in such circumstances as he had described had actually served. Alternatively it was being suggested that years spent in professional training should be allowed to count as service years within the meaning of the Act. He knew the anxiety of the Minister to promote co-operation between the municipal hospitals and the great voluntary hospitals. He (Captain Elliston) was told that there were members of the House of Commons who would like to see it made possible by this Bill to provide for the interchangeability between the federated superannuation scheme of the voluntary hospitals and the superannuation scheme of the local authorities. If that were practicable it would undoubtedly facilitate the interchange of personnel and would do a great deal to raise the standard of the hospital services in this country. What he had said also applied to other officers such as health visitors, nurses, and so on.

Mr W. H. GREEN said the London County Council had 3400 nurses on probationary service and he gathered that under this Bill those nurses would immediately be placed under the superannuation scheme. There was a great amount of coming and going in the ranks of probationers particularly in the nursing profession and a hardship would be imposed if all the probationary nurses to whom he had referred were compelled immediately to be placed under the superannuation scheme. Another point affected the health visitors engaged by local authorities. He was delighted to think that at long last the retiring age of health visitors was to be fixed at 60 but that carried with it a great grievance, because to qualify for the maximum pension health visitors must have put in 40 years service. That would be well nigh impossible under the conditions of the Bill. It was very seldom that a health visitor was appointed under the age of 25. That meant that at the most they could put in only 35 years service. He wondered whether some compensation might be provided in the Bill in regard to the 5 years service.

Sir FRANCIS FRIMANTLE said among civil servants they had men of the highest possible attainments. Those interested in local government wanted to get the same type of men into the local government service. To attract them to this service they must remove certain disadvantages one of which had been the absence of superannuation provision. This Bill helped to meet that difficulty. There were points in the Bill in which the transition from voluntary service to public service might be made more easy. The arrangements under the present Bill were not satisfactory for bringing in the midwives who while working under voluntary associations in villages where they were not employed for the whole of their time were also under a contract with the local authority under the Midwives Act to provide a midwifery service. Sir Francis asked the Minister to give the most earnest consideration to the requirements which would enable the midwives to secure the full advantages of superannuation. It was difficult to recruit midwives yet it was on the midwifery service that they depended very largely for the improvement of the maternity services of the country. He gave his cordial support to this Bill as a constructive measure for building up a great local government service.

MINISTERIAL REPLY

Mr BERNAYS Parliamentary Secretary to the Minister of Health said that the clause which dealt with the position of nurses was based on the recommendation of the Selby Bigge Committee. Obviously this was a matter which could very well be considered when the Bill reached committee. The Minister would be glad to receive any representations on the part of the interests concerned between now and the committee stage. As to the point raised by Captain Elliston as to why there was a differentiation in the rates of contribution between officers and servants, a uniform rate of 5 per cent was fixed by the Act of 1922 for all employees brought within its provisions. It was urged before the Selby Bigge Committee that the remuneration of an officer usually increased automatically or by promotion from the beginning to the end of his service and he was pensioned on the average remuneration of the last five years of his service when his remuneration was obviously at the highest. On the other hand a workman received wages which soon reached their maximum and remained at the same level for many years. Accordingly a workman's contribution paid throughout on a flat basis of remuneration brought into the superannuation fund a greater sum in relation to the pension drawn than did that of an officer. Since the same scale of pension was applicable to both classes of employees a smaller percentage rate of contribution should be sufficient in the case of a workman than in the case of an officer.

THE SCOTTISH MEASURE

On the previous day Mr ELLIOT Secretary for Scotland moved the second reading of the Local Government Superannuation (Scotland) Bill. He explained that there were two specific points in which the Bill differed from the English measure. In the first place it was proposed that the minimum number of officers to be covered by the scheme should be 50; under the English Bill the minimum number was 100. In the second place in the Scottish Bill they also made provision for local authorities to act jointly in cases where they had not themselves a sufficient number of employees to make a separate scheme. But all the small burghs had fewer than 50 whole-time officers so for this purpose they would be counted as employees of the county councils.

NOTES ON CURRENT TOPICS

Physical Training

In the House of Commons on June 11th the Physical Training and Recreation Bill was read a third time. On the motion for the third reading Mr LUDSAY Parliamentary Secretary to the Board of Education said that since the second reading action had been taken on four points. The local organisations committee had done a great deal of preliminary work and he hoped the local bodies would begin work during the summer holidays. The committee on propaganda intended to start an intensive campaign in the autumn. It had given special consideration to the use of films. The technical committee had been considering the question of the National College and had proceeded a long way. The question of research was very important. The grants committee could begin to consider applications as soon as the statutory powers were obtained. The aim was to build up a new leadership of trained men and women and to inspire the whole nation with the great ideal of personal fitness. They could not rest content until every child in the country had equality of access to all that was meant by physical education and had an equal chance to become a healthy citizen.

Mr LUDSAY said he had come to the conclusion that the part of the Bill which ultimately would probably prove the most valuable would be that which dealt with physical education particularly in the form of remedial exercises for those whose work was deleterious to their health rather than that

desirable to introduce some kind of compulsion either in notification or in ensuring completion of treatment. In Holland a voluntary system had given results better than ours, last year they had only 11 fresh infections per 100,000 of the population.

Mr J HENDERSON said that rheumatism was startlingly prevalent in large portions of industrial England. Several continental governments, backed up by the municipalities, had established a network of spas and clinics. In this country the leading hospitals were not dealing as they should with the manipulative treatment of this disease. He urged the Minister to organise a national service of municipal clinics in conjunction with the local hospitals.

Mr G GRIFFITHS urged the Minister to deal with burning pit heaps in mining districts, the fumes of which caused ill health. He commented on the absence in the report of anything about diabetes. We had in this country not fewer than 200,000 diabetics. A State-insured person who was a diabetic got his insulin free, if the wife of such a person was a diabetic and was prescribed insulin, her husband had to pay anything from 10s to 18s a week for it.

Mr GODFREY NICHOLSON said that the Ministry were losing a sense of proportion with regard to maternal mortality. Too much stress was being put on antenatal treatment and not enough emphasis on the importance of skilled attention at the actual time of birth. An eminent gynaecologist had said to him that it was the specialist who should be looking after the actual confinement and the practitioner doing the antenatal care. The solution of the problems of maternal and infantile mortality lay in educating the whole population.

Miss WARD said that before embarking upon a campaign of "Use your health services" it was important to know whether there were adequate health services provided by every local authority. We should have a detailed survey of what health services were available to see whether local authorities were taking advantage of the powers which they could use, and whether they had the necessary finances to enable them to do so.

MINISTERIAL REPLY

Mr BERNAYS said that the figures in the latest annual report of the chief medical officer of the Board of Education were illuminating. They showed that out of 1,630,000 school children examined only 0.7 per cent were suffering from definitely bad nutrition and only 10.6 per cent from subnormal nutrition. There was also the encouraging fact—which gave the lie to the assertion about the deterioration of our national physique—that the general death-rate had fallen by one third during the last 25 years and that the death-rate from tuberculosis in children under one year of age had been reduced by a half in the same period. Malnutrition was a problem and the Government could legitimately claim that it had been tackled with energy and effect in the last few years. Reference had been made to the question of satellite towns. This question was dealt with by a departmental committee in 1924, which recommended the establishment of a National Planning Board. The main suggestion was that the larger local authorities should be encouraged, and, if necessary, compelled, to make further outward development in the form of planned units outside the town, separated by adequate areas of open land. The instances of Welwyn and Letchworth garden cities had been raised, and the Government had been asked why we cannot apply experiments of that kind. These garden cities were started by public utility companies, and local authorities were doing much to secure the same objects. After all, town planning was planning to secure proper sanitary conditions, amenities and conveniences. The increasing use of joint committees meant the extension of planning for larger units.

[Sir FRANCIS FREMANTLE: They are doing nothing to marry factories to residences, and that is the whole essence of the thing.]

Houses were being built, Mr Bernays rejoined, under healthy conditions on the outskirts of the towns, and this policy would be continued and encouraged. With the existing organisations and working with the sympathy of established authorities, much was being and could be done.

Objection had been taken to the recognition of opticians as having power to prescribe for defective eyesight. While the Minister was satisfied that the ultimate ideal was that all persons should go to a medical eye specialist, he was satisfied that it would not be practical politics under present conditions to make this an invariable practice in all cases. The reasons were that the supply of qualified medical men was not sufficient to meet the needs of the whole population and that the people had not been educated up to recognising the advisability of this course in what they regarded as ordinary, straightforward cases of defective eyesight. The regulations, therefore, provided for either of the alternative courses being followed. Every insured person was required to visit his own insurance doctor before his application for ophthalmic treatment was granted.

PENSIONS FOR LOCAL GOVERNMENT OFFICERS

In the House of Commons on June 11th the Local Government (Superannuation) Bill was read a second time. In moving the second reading Sir KINSELEY WOOD said that the main and general object of the Bill was to secure such a measure of uniformity as might reasonably be required in regard to the provisions to be made by local authorities for pensions for their staffs. It required provision to be made for the superannuation of all whole-time local government officers and facilitated similar provisions by local authorities over and above that made by the general law relating to pensions for their other employees. The Bill brought the local government service in this respect into line with the long-established practice of the Civil Service and thus added another measure of protection in old age to a further section of the community. The present rate of contribution for both officers and servants was 5 per cent of their remuneration with an equivalent contribution from the local authority. It was estimated that in the present circumstances the rate of contribution needed to secure the benefits was in total 12 per cent for officers and 10 per cent as at present for servants, and the Bill accordingly proposed to increase the rate for new entrant officers by 1 per cent with a similar increase in the authorities' contribution. The Bill contemplated the minimum of interference with the various superannuation schemes established under local Acts, but if the main purpose was to be achieved it was essential that those schemes should be extended to cover, when they did not already do so, all whole-time officers.

DIFFERENTIAL TREATMENT

Captain ELLISTON expressed disappointment that no provision was made by the Bill for the optional grant of added years by local authorities in the case of their professional officers. He had been advocating that concession since 1922. He had some special experience of the conditions of service of medical officers. They were men who spent five or six years in acquiring their professional qualifications. At the end of that period if they were wise, or if they were fortunate, they took a period of service as house physician or surgeon in a hospital and then they had to acquire the further professional qualifications which would enable them to take a public health appointment. In view of the tremendously varied character and importance of public health work in these days, a medical officer who hoped to secure an appointment had to acquire special experience in a number of directions. He had to spend a period of residence in hospital, he had in most cases to spend a period in a tuberculosis sanatorium. He

Sir FRANCIS FREMANTLE said among civil servants they had men of the highest possible attainments. Those interested in local government wanted to get the same type of men into the local government service. To attract them to this service they must remove certain disadvantages, one of which had been the absence of superannuation provision. This Bill helped to meet that difficulty. There were points in the Bill in which the transition from voluntary service to public service might be made more easy. The arrangements under the present Bill were not satisfactory for bringing in the midwives who while working under voluntary associations in villages where they were not employed for the whole of their time were also under the Midwives Act to provide the local authority under the Midwives Act to provide a midwifery service. Sir Francis asked the Minister to give the most earnest consideration to the requirements which would enable the midwives to secure the full advantages of superannuation. It was difficult to recruit midwives yet it was on the midwifery service that they depended very largely for the improvement of the maternity services of the country. He gave his cordial support to this Bill as a constructive measure for building up a great local government service.

Mr. LAFY-SMITH said he had come to the conclusion that the part of the Bill which ultimately would probably prove the most valuable would be that which dealt with physical education particularly in the form of a medical exercise for those whose work was deleterious to their health rather than that

which dealt with physical recreation. It must not be taken for granted that because young medical men engaged in active physical recreation up to the age of 25 or so they did not need physical education. One of the most striking observations which had fallen from Lord Dawson of Penn was that when he had watched hikers, tennis players, and even territorialists he had noted that many of them were suffering from defects of posture, stooping shoulders, and bad chests, which would pay them out a little later when the health and strength of youth had passed. He (Mr Lees-Smith) had never envied great athletes from the point of view of permanent fitness for life. When he read of the death of great athletes and noted their age he came to the conclusion that they were not quite as well off as the rest of the population and he was reminded of an observation by Plato that "an athlete is on a slippery edge in respect of health." He hoped it would not be thought, therefore, that by providing facilities for great athletic prowess they would be doing the work of building up the physical health of the nation.

Mr WAKEFIELD said speaking for himself, and he was sure also for his colleagues on the National Advisory Council, their aim was to try to make the great mass of the people, young and old, physically fit. They did not want to get a few sprinters doing 100 yards in 10 seconds, they would far rather have a million people doing 100 yards in 12 or 13 seconds. The result of their work would not depend on the success and ability of one or two outstanding athletes but on the general excellence attained by all.

Mr LINDSAY, replying to the debate, said that while they all wished to encourage the games which were characteristic of this country there was a great deal to be said for physical education as such. He was told by experts that at the present time they were all going about half dead, and that there were a few very simple exercises which every member of the House of Commons could take every day and which would make a great difference to the health, the physique, and the happiness of those who engaged in them. They did not quarrel with that theory at all. He had the greatest admiration for what was being done in Germany, Czechoslovakia, Sweden, Denmark, and elsewhere, but he was still convinced that they had to proceed on the basis of our characteristic British games. If they did that he was quite certain they would make this organisation a complete success.

School Medicine

On June 14th in committee of supply, Mr KENNETH LINDSAY, Parliamentary Secretary to the Board of Education, said that the total increase in the vote over last year was for £1,296,233. Part of the increase was due to general maintenance charges, and there was another item, provision for physical training under the Government's new scheme. That provision would be made in a supplementary estimate. During the last 18 months provision had been made for the youngest children by way of 7500 nursery schools in 80 different areas. Fifty new schools with playing fields attached were approved in 1935-36, and during the last year 90 such new schools were also approved. During the last two years, 111 playing fields had been acquired for separate schools, and 61 to cater for a variety of schools had been acquired. Gymnasiums had been provided for 117 elementary schools. Mr Lindsay was glad to be able to report progress along many lines of advance in regard to the School medical service and physical education. Since the recent circular was issued 34 new proposals and 5 proposals for enlarging existing nursery schools had been received. The present position was that 89 nursery schools were recognised by the Board of Education and in addition 31 had been approved in principle and 10 were under consideration. While the growth was rapid in proportion the total was still comparatively small and there were still many areas where local conditions would justify providing these schools

but where proposals had not been received. Their object was to obtain for all children under five years of age whose home conditions were unsatisfactory light airy rooms, special playgrounds, play material, and a happy environment which they needed for normal physical and mental development.

MORE STAFF NEEDED

The school medical service was a wonderful service, but it needed more staff. Since the recent circular was issued 32 authorities had increased their staff by the appointment of six whole time and 29 part-time medical officers, 12 authorities had appointed aural and 8 ophthalmic specialists, and one a specialist on rheumatism. One hundred proposals had been received for building school clinics and extending old ones and there were 18 new schemes for orthopaedics, 19 for aural treatment, and 15 for artificial light treatment. These were examples of how the staff was being increased, but there was still leeway to make up. At the time of the issue of the circular it was estimated that there were less than two-thirds of the number of school dentists required. He was glad to say, however, that 61 authorities had increased their staff by employing 62 full time and 23 part time dentists. But the ideal they must achieve was an annual inspection of all school children, otherwise he did not see how they could make good progress in this which was probably one of the most important aspects of the health services. There were also day open-air schools, residential schools for delicate children, and the problem of the feeble minded was always with them. It was particularly difficult to deal with in the countryside. For some children the only solution was the residential school and on that score one new proposal had been received from a country district.

On June 11th in the House of Commons the Children and Young Persons Bill, which has already passed through the House of Lords, was read a second time.

QUESTION TIME

WEDNESDAY, JUNE 9TH

Milk Ration for Boys in the Navy

Mr GRAHAM WHITE asked the First Lord of the Admiralty the present amount of the milk ration for boys in the Navy.—Mr DUFF COOPER replied: There is no fixed ration of milk for boys in the Navy as they are victualled under the general mess system and are provided with a varied dietary without fixed rations of the various items of foodstuffs. The average amount of milk issued daily to each boy is estimated to be approximately $\frac{1}{2}$ pint.

Colonel GRATTON: Will my right hon. friend say whether the milk is fresh or tinned?—No further answer was given.

Industrial Employment of Children at Home

Mr DENMAN asked the Home Secretary whether his attention had been called to the charges made of excessive employment of children at home on industrial work, whether he could give any information as to the extent of this practice, and what steps he was taking to stop it.—Mr GEOFFREY LLOYD, Under Secretary, Home Office, replied: I am obliged to my hon. friend for calling attention to this matter, about which no complaints have reached the Home Office. In 1931 as the result of an inquiry it was reported by the education authorities that 652 boys and girls aged 12-14 were employed in industrial work at home within the limits allowed by the law. My right hon. friend is proposing to ask the education authorities in the near future for information as to the application of the law as amended by the Children and Young Persons Act 1933, and this information will include the point now raised.

Royal Marines and Tuberculosis

Mr ROBERT TAYLOR asked the First Lord of the Admiralty the number of Royal Marines invalided out of the service owing to tuberculosis, the number who

had applied for pension; and the number of cases in which pensions were awarded during the last three years.—Mr DORR COOPER replied: During the period of three years ended April 30th 1937 65 Royal Marines were invalided out of the service on account of tuberculosis of which number 62 were pulmonary and 3 other forms; each invalid was automatically considered for an award of pension which was granted in 43 cases.

THURSDAY JUNE 10TH

Health of Spanish Refugee Children

Mr LEACH asked the Minister of Health whether the Basque children who recently reached this country had been vaccinated and inoculated before their arrival and if so against what diseases were they vaccinated or inoculated and when were these operations performed.—Sir KINGSLEY WOOD replied: So far as I am aware no special measures of vaccination or inoculation were taken before the children's arrival in this country, but approximately 60 per cent were found on examination to have been vaccinated against small pox. I understand that a first inoculation against typhoid has now been given to nearly all the children in the camp at North Stoneham.

Sir ANCHBALD SOUTHEY asked the Minister of Health how many Spanish refugee children had been admitted into this country and how many cases of typhoid or suspected typhoid had occurred amongst them.—Sir KINGSLEY WOOD replied: According to the information with which I have been supplied 3881 children arrived at the camp at North Stoneham on May 23rd and 24th. Six cases of typhoid including one not finally diagnosed and one of paratyphoid have occurred amongst them. Three children are at present under observation for this disease.

Sir A. SOUTHEY: In view of the risk of the spread of this disease would the right hon. gentleman give an assurance that none of these children will be allowed to move to other parts of the country until they have undergone the full quarantine?—Miss WILKINSON: Is it not a fact that the arrangements in regard to quarantine have been most admirably carried out by the voluntary service of doctors?

Sir KINGSLEY WOOD: The responsibility for the conduct of this matter rests with the voluntary committee. I think that everyone will agree that my department have given all the advice and assistance that can be given in this matter and we shall continue to do so. So far as the question of the removal of children is concerned I am anxious myself, subject to satisfactory medical conditions that these children shall leave the camp as soon as reasonably practicable and possible. Any assistance that my medical officers can give to medical officers in districts where they may have to go in order to secure safety so far as health is concerned will be given.

Sir J. LAMB: Will the medical officers of health be informed before the arrangements are made to transfer these children?

Sir KINGSLEY WOOD: Oh yes Sir. It is obviously a very important responsibility on the local medical officers of health.

Sir JOHN LAMB: Does the right hon. gentleman realise that some of these children have already been removed from the camp and that some of them are in my own constituency? Have the necessary steps been taken between the Ministry of Health and the local authorities to make sure that the children are fit to be removed?

Sir KINGSLEY WOOD: The matter is one for the local authority in the area and the medical officer concerned. From my own knowledge and observation I believe that the medical officers in the districts are fully alive to the need for properly carrying out their duties.

Juveniles and National Health Insurance

Mr THORNTON asked the Minister of Health whether the court of inquiry had come to any settlement in connexion with the fees to be charged by the doctors when boys and girls become employed after leaving school; and whether the Government intend bringing in a Bill to deal with the matter.—Sir KINGSLEY WOOD replied: Yes Sir. The court of inquiry, which was asked to consider the doctors' capitation fee to be paid as from January

next for all insured persons entitled to medical benefit on the assumption that employed juveniles would then be included has reported in favour of the present rate of 9s per annum. I shall introduce the necessary Bill as soon as Parliamentary business permits.—Mr THORNTON: Is it in consequence of their powerful organization that the doctors have got all that they wanted?—Sir KINGSLEY WOOD: I would advise the hon. gentleman to consult the doctors.

Health Insurance and Ophthalmic Treatment

Sir ERNEST GRAHAM LITTLE asked the Minister of Health whether the National Ophthalmic Treatment Board was taken into consultation by him in drafting the Additional Benefits Amendment 1937 and whether he was satisfied that the arrangements made by these regulations for permitting sight testing by recognised opticians would in no way interfere with the development of the best possible ophthalmic medical service in this country.—Sir KINGSLEY WOOD replied: Before the regulations to which the hon. Member refers were made the fullest consideration was given to the views expressed on behalf of doctors associated with the work of the National Ophthalmic Treatment Board. I see no reason why any arrangements made under the regulations should interfere with the development of a satisfactory ophthalmic medical service.

Major PROCTOR asked the Minister of Health whether in connexion with the Additional Benefits Amendment Regulations, 1937 he could say what steps had been taken by him to obtain agreement between the sight-testing opticians and the National Ophthalmic Treatment Board with regard to the question of sight testing in connexion with ophthalmic benefit.—Sir KINGSLEY WOOD replied: Repeated attempts have been made to obtain agreement between the different schools of thought on the subject referred to by my hon. and gallant friend and I have myself received representative deputations from both sides. Unfortunately it was not possible for any agreement to be arrived at.

Unemployed Persons and Dental Treatment

Mr WHITFIELD asked the Minister of Health whether his attention had been drawn to the increased cost of public assistance committees due to dental treatment and the provision of artificial dentures to persons in receipt of allowances from the Unemployment Assistance Board; and whether he was prepared to arrange for such cost to be met by the Board and thus relieve the local public assistance committees of what should be a national charge.—Sir KINGSLEY WOOD replied: I have received a communication from one local authority on this matter. I am advised that under the Unemployment Assistance Act the Board have no power to defray the cost of dental treatment.—Mr WHITFIELD: Do I understand that the public assistance committees will still have to bear the burden of these additional costs?—Sir KINGSLEY WOOD: Yes Sir; the provision of medical benefits remains the responsibility of the local authorities under the Act.

MONDAY JUNE 14TH

Spanish Refugee Children

Mr MITCHELL asked the Home Secretary whether he could make any statement in regard to the future of the Spanish refugee children in Great Britain in the event of it being impossible to repatriate them in the near future.—Mr LLOYD Under-Secretary Home Office replied: The committee responsible for the care and maintenance of these children has given an undertaking to the Government that they will be repatriated by the committee as soon as circumstances permit. It is clearly impossible to foretell when circumstances will permit of repatriation. As my right hon. friend the Minister of Health stated on June 10th the responsibility for any arrangements for moving them from the camp at North Stoneham rests with the voluntary committee which I understand making arrangements for their accommodation in groups in private institutions and similar places.

Effect of Noise on Health

Sir RALPH GLYN asked the Minister of Health whether he would appoint a committee to inquire into the detrimental effect of unnecessary noise on the health of people

living in large cities, and how far medical opinion supported the view that many instances of nervous breakdowns, &c., were due to causes which could be to a great extent eliminated—Sir KINGSLEY WOOD replied Research into the effects of noise on workers carried out by the Industrial Health Research Board of the Medical Research Council, on which reports have been published, shows that it is very difficult to detect and measure any specific effects of noise on health, and it is hardly possible to assess within the limits of a Parliamentary answer the influence which medical opinion would assign to the part played by noise in the increased strain of modern life I will send my hon. and gallant friend some references to medical publications on this subject As at present advised, I do not think the subject lends itself to investigation by a committee as suggested.

TUESDAY, JUNE 15TH

Nurses' Hours in Scottish Mental Hospitals

Mr ROBERT GIBSON asked the Secretary of State for Scotland what was the total number of attendants and nurses on the staffs of, or employed at, mental institutions in Scotland as at May 31st, 1937, how many of these individuals had a tour of duty extending to 84 or more hours, 78 and under 84 hours, 72 and under 78 hours, 66 and under 72 hours, 60 and under 66 hours, 54 and under 60 hours, 48 and under 54 hours, 42 and under 48 hours, and under 42 hours per week, respectively, what were the corresponding figures for the Smithston institution in Greenock, and if he had any statement to make regarding the introduction of legislation to restrict the working week of such individuals to a maximum of 48 hours—Mr WEDDERBURN, Under Secretary of State for Scotland, replied The information desired is not immediately available but steps have been taken to obtain it and I will communicate with the hon. and learned Member when it is received.

Maternal Mortality

Mr JAMES GRIFFITHS asked the Minister of Health the maternal mortality rate for each of the administrative counties and county boroughs in Wales for the year 1936, and the corresponding rate for England and Wales as a whole—Sir KINGSLEY WOOD replied The following table gives the information requested by the hon. Member—

	Maternal mortality deaths for 1936 per 1000 total (live and still) births	
	Puerperal sopsis	Other puer- peral causes
England and Wales	1 34	2 31
Cardiff C B	2 55	1 13
Merthyr Tydfil C B	1 02	—
Newport C B	0 50	1 77
Swansea C B	2 22	4 44
Administrative Counties		
Anglesey	1 30	5 20
Brecknock	1 25	4 99
Caernarvon	2 38	4 17
Cardigan	1 48	7 42
Cardmarthen	1 54	5 01
Denbigh	0 83	2 91
Flint	2 04	3 58
Glamorgan	2 42	2 92
Merioneth	—	1 82
Monmouth	2 96	3 52
Montgomery	—	1 43
Pembroke	2 25	1 50
Radnor	—	3 07

Housing Conditions in Scotland

Sir THOMAS MOORE asked the Secretary of State for Scotland whether, in view of the fact that over 250,000 houses were still required to replace unfit dwellings in Scotland and that, owing to the present condition of the building trade, it would not be possible to erect more than some 25,000 houses per annum, he could state what special steps he proposed to take to encourage temporary reconstruction and reconditioning in order to improve the present position—Mr WEDDERBURN replied In view of the present pressure on the supply of building trade

labour in Scotland, my right hon. friend is not satisfied on the information at present before him that a policy of temporary reconstruction and reconditioning would make any material contribution to housing needs but following representations made to him by the Convention of Royal Burghs he is making further inquiries on the subject.

Hospital Staff at Gibraltar

Lieut. Commander FLETCHER asked the Secretary of State for War whether the normal hospital staff at Gibraltar was too small to be able to cope with 30 unexpected patients, or whether there were other reasons, and, if so, of what nature, for the dispatch of four nurses to Gibraltar to nurse the wounded from the *Deutschland*—Mr HORE BELISHA replied The staff of the Military Hospital, Gibraltar, is adequate to deal with a normal number of patients. The casualties from the *Deutschland* were abnormal.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdr A. G. Lee to *Pembroke* for R.N.B.
Surg. Lt. Comdr T. G. B. Crawford to be Surg. Comdr.
Surg. Lt. Comdr V. J. Fielding retires at own request.
Surg. Lt. Comdr R. V. Jones to *Wellington*.
Surg. Lts G. L. Hardman, J. F. Meynell, W. S. Parker, and W. B. Teasey to *Victory* for R.N.B. and I. C. Macdonald to *Falmouth*.

ROYAL NAVAL VOLUNTEER RESERVE

Proby Surg. Lt. D. R. Matland to be Surg. Lt.

ARMY MEDICAL SERVICES

Col. J. Heatly Spencer, C.B.E., late R.A.M.C., having attained the age for retirement, is placed on ret. pay.
Lt. Col. W. H. O'Riordan, M.C., from R.A.M.C., to be Col.

Royal Army Medical College Lt. Col. and Bt. Col. R. C. Priest, K.H.P., R.A.M.C., to be Professor of Tropical Medicine and Consulting Physician to the Army.

ROYAL ARMY MEDICAL CORPS

Maj. G. S. McConkey to be Lt. Col.

TERRITORIAL ARMY

Capt. W. C. Armstrong to be Maj.
Lts G. O. Brooks, F. G. Matland, W. B. R. Monteith and J. B. Bishop to be Capt.
R. M. McGregor (late Offr. Cadet, Edinburgh Univ. Contgt. (Med. Unit) Sen. Div., O.T.C.) to be Lt.

ROYAL AIR FORCE

Flight Lt. H. C. S. Pimblett is promoted to the rank of Squadron Leader.
Flying Offrs. promoted to the rank of Flight Lt. J. R. R. Jenkins, L. W. R. Farley, and R. C. O'Grady.
Flight Lt. T. J. M. Gregg to No. 4 Flying Training School, Abu Sueir, Egypt.
Dental Branch—B. Blackburne to Medical Training Depot, Halton, on appointment to a non-permanent commission as a Flying Offr. for three years on the active list.

AUXILIARY AIR FORCE

No. 600 (City of London) (Fighter) Squadron J. H. Attwood is granted a commission as Flying Offr.

INDIAN MEDICAL SERVICE

The Commander in Chief in India has notified the following appointments—

Col. W. J. Powell, C.I.E., as Assistant Director of Medical Services, Peshawar District, with effect from March 27th last.

Col. W. L. Watson O.B.E. as A.D.M.S. Kohat District.
Lt. Col. H. C. D. Rankin, O.B.E., as specialist in medicine, Deccan District.

Appts. made in India—

A.D.M.S. Col. T. C. C. Leslie, O.B.E., Brit. Serv.
D.A.D.M.S. Maj. R. Murphy, R.A.M.C.

(Continued at foot of opposite page)

University of Oxford

Dr. Gardner was educated at Oxford University and St. Thomas's Hospital graduating in 1911. In the following year he was admitted to the fellowship of the Royal College of Surgeons of England and a year later he took his M.D. degree. From 1914 to 1917 he held a Radcliffe travelling fellowship and in 1923 he was awarded the prize for medical research. Dr. Gardner held the posts of demonstrator in medical anatomy at St. Thomas's Hospital and St. George's Hospital. He is a fellow of University College, Oxford, and the author of "Bacteriology for Medical Students and Practitioners" and of "Microbes and Ultramicrobes". He contributed the section on the dysentery group of bacilli to the Medical Research Council's "System of Bacteriology" in 1926. His work on the growth of *Shigella* has much to recommend it, and he is credited the cough-throw method of early diagnosis which he described in our columns in 1923.

University of Cambridge

On June 11th the following degrees were conferred —
 M.D.—F W Shepherd, T R Thomson and E. W. Taylor
 M.B. BChir.—J G Lewis, N B Rette and Guy Rigby
 Jones, S C Buck, G E Lorton A F W Harley A J Moon
 J. C. Culvercraft J H Water and F S Gorman
 M.B. M.F. Mackenzie M. F. Tattersall, J S Ellis,
 A L Jackson, H B Mellowes J M Scott E F W Grellier and
 K W B. Rogerson

At a meeting of the council of the college held on June 10th with Sir Cuthbert Wallace the president in the chair a letter was read from the Rockefeller Foundation presenting the sum of £500 for one year towards research work at the college. The honorary college medal was awarded to Sir Frank Colver in recognition of his many contributions to scientific odontology and to the service of the college. Sir Holburn Waring who has been a member of the council since 1913 and who was president of the college from 1935-36 presented a silver cup to mark his retirement from the council.

Diplomas of fellowship were granted to the following —

J. H. Mulvaney, M.R.C.P. Lond., King's Coll.; D. E. Fernandez, M.R.C.P. Lond., Ceylon and St. Barr's; J. H. Barnett, M.R.C.P. Lond., Univ. Coll. of Guy's; G. G. Ganger, M.R.C.P. Lond., Univ. Coll. of Guy's; M. B. Land, King's Coll. and West London; A. H. Charles, M.B. Camb., St. George's and St. Thomas; A. B. Evans, M.B. Camb., Westminster and St. Thomas; Ashton Miller, M.B. Camb., St. George's and St. Thomas; W. H. Crubellier, M.R.C.P. Lond., St. H. Lamb; G. F. Critchley, M.B. Lond., St. Thomas and Guy's; S. G. Mayer, L.R.C.P. Lond., London Hosp.; Guy Blackburn, M.B. Camb., St. Bart.; V. A. Law, M.B. Camb., London Hosp.; D. N. Rhina, M.B. Lucknow, Middlesex and London Hosp.; H. Hied, D. M., Guy's; J. C. Loe, M.B. Camb., St. Thomas's; W. R. Moringstam, M.B. Lond. Univ. Coll.; E. L. Williams, M.B. Camb., St. Thomas; K. G. F. Mackenzie, L.R.C.P. Lond., Cambrilree and St. Thomas; Amarnath, M.R.C.P. Lond., Calcutta, Middlesex and St. Bart.; R. T. L. Nayyar, M.B. Calcutta, Hosp. and St. Bart.; A. H. H. Talwar, M.B. Bombay, St. Bart.; R. A. Hughes, M.B. Liverpool; D. N. D. Rao, M.B. Bombay; T. H. Ackland, M.B. Camb., St. Bart.; S. Campbell, M.D. Belg. London Hosp.; G. N. Cooper, M.D. Oxon, Guy's; V. S. London; K. N. Chinn, M.B. Belg. St. Thomas and London Hosp.

(Continued from previous page)

App'ts vacated in India:—
A.D.M.S. : Col. A E S Irvine D.S.O VHS Brit

Embry Med Offr : Maj A J Bado R.A.M.C.
Capt I. B. S. Quinto resigns his commission

COLONIAL MEDICAL SERVICE

Surg Lt P H Stone has been appointed Medical Officer Kenya; Dr W I H Lightbody (Palestine) becomes Assistant Director of Medical Services (Health) Sierra Leone; Dr J Naudi (M O) Senior Medical Officer Nigeria; Dr W Nelson (Nigeria) Senior Medical Officer Gold Coast; Dr B Nicklin (Zanzibar) Medical Officer Nyasaland; and Dr A. M. W. Rae (Gambia) Assistant Director of Medical Service Gold Coast.

L. G. L. Ford, M.B. Dubl. Guy's and London Hosp. A. N. McCrea, M.B. Camb. St. Mary's and St. Thomas's. S. K. Menon, M.B. Bombay Guy's. J. S. M. Pringle, M.B. Dub. London Hosp. H. J. Ro. M.B. Aberd., London Hosp. and Middlesex. J. C. Scott, M.D. Toronto St. Bart's and Radcliffe Inf. R. A. M. Yeates, M.B. Sydney; and F. R. Youniss, M.B. Calro St. Bart's and Guy's.

A diploma of membership was granted to Alan William Woolley and diplomas in anaesthetics were granted jointly with the Royal College of Physicians to the following —

C. D. Hance, R. P. Booth, E. M. Chivers, R. T. V. Clarke, R. W. Cope, Herbert Curtis, G. D. Drury, A. C. Fraser, A. H. Gabley, J. H. Gault, Ernest J. Landon, A. H. G. Morton, A. H. Musgrave, J. W. Nicoll, William Niven, Angela, J. O. Ostendorf, G. S. W. Organ, H. Pratt, A. C. R. Rankin, O. S. Ransford, J. R. Ritchie, J. M. Savage (Major, R.A.M.C.) H. R. Sheppard (Major, R.A.M.C.), J. T. Turner, R. O. Welch and Doris E. O. Walker.

At the recent primary examination for the fellowship the following candidates were successful —

P. Berbrary, M.D. Manitoba, Univ. Coll. J. A. W. Bingham
M B Belfr, Middlesex; Ruth E M Bowden, Roy Free A C
Brewer, M.B Liverpool A J Broomhall L.L.O.P. Lond
Univ. Coll. and Middlesex D M F Carter Guy's G H D
Middlesex Guy's Clark J S Chalmers Univ. Coll. and
Middlesex E. B. Elshammam M B Edin. Camb. Univ.
Coll. R. D. Ewing M.B Camb., Middlesex; Frances V
Gardner Roy Free A Goutwille M.R.C.S. Eng., Liver-
pool and Middlesex J. H. Griffiths M.B Lond. Middlesex; E. O
Graham M.B Lond. Univ. Coll. and Middlesex
Caml. Lond Hosp.; J. Hession M B Cape Town, Univ. Coll.;
W B Hisset M.D N.Z., Univ. Coll. W G Holdsworth
M.B. Melb. A. J. Hunt B.M. Oxon Univ. Coll. and St
Barth's A. J. Hunt M.B. Edin. Univ. Coll. and Middlesex
B. Ismail, M.D. Cairo, Univ. Coll. and St. Bart's T. B.
M.D. Manitoba, Middlesex and Univ. Coll. A. B. King M.B.
Lond Univ. Coll. G H Kitchen M.D Toronto Univ. Coll.
and Middlesex; R. A. W. Lewis-Lloyd M.B Lond, St. Bart's
and Middlesex; J. L. L. Loefer M.B. Camb. Univ. Coll. and
L. Lloyd Frams Edin. and Middlesex; T. G. Lowden B.M.
Oxon., Univ. Coll. and Middlesex R. M. Loxton M.B. Brit-
Univ. Coll. and Middlesex J. M. McGladrey M.B. Lond.
and Middlesex; A. Macdonald M.B. A. MacGowan, M. Glad-
Middlesex; R. M. M. Macdonald M.B. Black. Univ. Coll.
H. E. M. Martin, M.B. Dubl. Univ. Coll. and Middlesex;
A. Marzhar M.B. Cairo, Middlesex and Lond Hosp.; A. M.
Ministry M.D. Cairo, Middlesex and Univ. Coll. B. P. Moore
M.B. Lond. Univ. Coll. and Middlesex; J. B. P. Moore
Melb., Middlesex and Univ. Coll. A. L. Newton M.B. Melb.
Univ. Coll.; H. R. O. Norman, M.D. Toronto Middlesex and
Univ. Coll.; D. M. O'Callaghan St. Bart's J. B.
O'Connell M.B. Melb. Univ. Coll. and Middlesex; J. B.
Bombay, Middlesex W. D. Parry M.B. Lond., Middlesex and
St. Bart's W. Parke, M.B. Liverpool D. G. Phillips M.B. N.Z.,
Univ. Coll. G. P. Pryor M.B. Bel. S. C. Raw M.B. Dubl.;
R. A. Riddell B. A. Rishworth Guy's; A. R. Rishworth
Farns. M.B. Cairo, Middlesex and Univ. Coll. A. R. Rishworth
M.D. Daheishie Univ. Coll. A. H. M. Sidons M.B. Camb.,
Univ. Coll. A. J. Slesor, M.B. Aberd. Middlesex
A. A. Small M.B. Univ. Coll. and Middlesex; H. Spencer
M.B. Darham M.D. Lond. Univ. Coll. and Middlesex
D. M. Thomson M.D. Manitoba Middlesex and Univ. Coll.
D. M. Thomson, M.B. Sydney A. J. Walker St. Bart's;
A. Wardale M.B. Lond. Univ. Coll. W. Wynn Williams,
Univ. Coll. and Middlesex J. Ziegler M.B. Melb. St. Mary's
and A. Zinoroff Middlesex

The following examiners were elected for the ensuing year —

Dental Surgery—Surgical Section Mr C. P. G. Wakeley
Mr C. F. Ghattock Mr I. H. Mitchiner Mr E. G. Elsingner
Mr Reginald Vick, and Mr Basil Hume Medical Section
Dr R. A. Howlands Dr A. H. Douthwaite Dr H. A. Hefeking
and Dr Charles Newman

Primary Fellowship—Anatomy Mr P N Rodgers
Prof H H Woodward Prof R B Green and Mr E I Hill be
Physiology Prof Hamilton Hartridge Prof John Mellanby
Prof J M Hanks and Prof A S G O'Leary

Mr W. A. Cunningham B.Sc. Prof W. J. Ellis Mr R. H. Ink, and
 Mr Wilfrid Houston D.Sc. Anatomy Mr L. Little
 Dr A. J. E. Carr Prof W. J. Hamilton Physiology; Prof
 A. St. G. J. Huggert, and Prof. Samuel Wright, Midwifery
 Mr A. C. Palmer Mr Victor Leck, Mr Trevor Davies, and
 Dr Wilfred Shaw Pathology; Prof James McIntosh Dr W. G.

Barmed, Sir D. W. Williams and Sir D. H. Pater
Diploma in Public Health.—Part I: Major-General H. J. M.
Perry. Part II: Dr Charles Lyster.

Diploma in Tropical Medicine and Hygiene—Major-General
W. J. MacArthur and Dr. Hamilton Katcher

Diploma in Ophthalmic Medicine and Surgery—Part I
Mr Leighton Davies and Mr Amcock Greaves, Part II: Mr

Diploma in Psychological Medicine—Prof F. L. Golla

Diploma in Laryngology and O'logy—Part I: Mr. F. J. Scott and Mr. Edward Carew Shaw Part II: Mr. T. J. Lorton

Diploma in Medical Radiology—Part I: Dr H T Hunt
Part II: Dr Hugh Davies

Diploma in Anæsthetics—Dr H F Gaikin Boyle
Diploma in Child Health—Dr A G Maitland-Jones

University of Wales

At recent examinations the following candidates were successful in obtaining the tuberculosis diseases diploma —

A. A. Azeez, M. P. Crowe, B. A. Dormer, M. C. Malkani, C. F. McConn, K. P. R. Philal, N. N. Sen, H. K. Surveyor, G. R. Talwalker and Helen Turner

University of Sheffield

Dr Gilbert Forbes has been appointed lecturer in forensic medicine and Dr J. M. Kennedy lecturer in infectious diseases. Dr J. Webster Bride has been appointed examiner in obstetrics for the final M.B. examination in September.

Middlesex Hospital Medical School

On Wednesday, July 21st at the Scala Theatre, Lord Dawson will distribute the prizes gained during the past year by students of this school. Dr G. E. Beaumont will deliver an introductory address entitled *The Breath of Life*. The wards of the hospital, the medical school and research departments, and the nurses' home will be open to inspection after the prize giving.

Queen's Hospital for Children, Hackney

This hospital is undertaking an extension and reconstruction scheme which will cost £50,000. Of this £30,000 must still be raised if the buildings are to be opened free of debt.

National Smoke Abatement Society

The offices of this society are being transferred from Manchester to London, and after Thursday, June 24th, the address to which all communications should be sent will be Chandos House, 64, Buckingham gate, Westminster, S.W. 1. The society's present London address at 71, Eccleston-square will no longer be used except where the personal attention of Sir Lawrence Chubb is desired.

Forthcoming Congresses

Meetings which have been arranged for the future include the following —

June	19th-23rd	Journées Médicales de Bruxelles	Brussels
	21st-25th	Silicosis Symposium	Saranac Lake N.Y.
"	26th-30th	Journées Médicales Internationales de Paris	Paris
July	1st-3rd	National Association for the Prevention of Tuberculosis	Bristol
"	5th-11th	International Hospital Congress	Paris
"	8th-10th	Oxford Ophthalmological Congress	Oxford
"	12th-17th	International Short wave Congress	Vienna
"	19th-24th	International Congress on Mental Hygiene	Paris
"	20th-24th	British Medical Association	Belfast
Aug	24th-1st	International Congress of Child Psychiatry	Paris
July	20th-1st	Population Congrès	Paris
Aug	5th-7th	Internationale Gesellschaft für Geographische Pathologie	Stockholm
Sept	29th-4th	International Swiss Medical Week	Interlaken
Sept	1st-8th	British Association	Nottingham
"	5th-9th	International Union Against Tuberculosis	Lisbon
"	13th-17th	International Congress of Radiology	Chicago
"	13th-15th	International Society of Gastro-enterology	Paris
"	16th-18th	International Congress on Hepatic Insufficiency	Vichy
"	27th-30th	International Child Welfare Congress	Rome
Oct	2nd-4th	International Congress for Psychotherapeutics	Copenhagen
"	4th-9th	International Rheumatism Congress	Paris
"	17th-22nd	International Society of Medical Hydrology	Wiesbaden and Frankfurt
Dec	8th-15th	International Congress of Ophthalmology	Calro
1938			
March	21st	International Leprosy Conference	Calro
"	26th-31st	International Congress on Rheumatism and Medical Hydrology	Oxford
September		International Surgical Society	Vienna

Newbury District Hospital

This institution has been remodelled and extended at a cost of some £24,000 and the new buildings were opened lately by Mr A. Thomas Lloyd, His Majesty's Lieutenant of Berkshire. Two wings have been added to form new men's and women's wards and the accommodation has been increased from 36 to 64 beds.

A National Dental Service

Sir Kingsley Wood, the Minister of Health, accompanied by Mr R. H. Bernays, parliamentary secretary to the Ministry, on Tuesday last received a deputation representing the British Dental Association, the Incorporated Dental Society, and the Public Dental Service Association. The deputation emphasised the need for a comprehensive dental service, as an essential sequel to the school dental service, which would provide dental inspection and treatment for every insured person. This could only be made possible by means of a statutory dental benefit. The service should be organised on a panel system similar to that in force for medical benefit, and the dentists, like the insurance medical practitioners, should be remunerated on a capitation basis. Sir Kingsley Wood said in reply that over 10 million persons—two thirds of the whole insured population of England and Wales—were already entitled to dental treatment as an additional benefit and that the scope of the existing scheme would be considerably extended by the new proposals for bringing juveniles into National Health Insurance. It was clear that the cost of providing dental benefit as a statutory benefit would be very heavy and would raise the question of an increase in the contributions paid by insured persons and their employers. He was nevertheless much impressed by the arguments put forward and promised to give them careful consideration.

Harveian Society of London

At the Buckston Browne dinner held at the Connaught Rooms on June 10th, Lord Hewart proposed the toast of the Society and said he thought doctors had little to fear from the Recording Angel. Dr A. H. Douthwaite, responding as president, announced that despite a doubling of its subscription the Society now had over 400 members. Its present stability would have been impossible but for the ten years' devoted work of Dr de Bec Turtle, whose latest benefaction was the gift of a cigarette box and snuffbox in celebration of Coronation year, while the dinner itself was one of the many manifestations of the generosity of Sir Buckston Browne. Mr M. F. Nicholls having ingeniously proposed the Guests, Mr H. L. Eason was led from thoughts of Harvey and the circulation of the blood to speculations about other circulations—of the port of the press, and of London traffic this last being sadly impaired by arterio-sclerosis, ischaemia, and clots in all the main arteries, with an occasional coronary thrombosis near the Bank of England. The next speaker, appropriately enough, was Mr Ernest Bevin, whose feelings about the bus strike caused him to appeal for closer relations between medicine and industry. He wished that doctors would take less interest in incidence and more in causation—that they would act as a look-out brigade and not postpone action until disease had killed a large number of people. The new chemical and machine age, coming so suddenly, had produced a situation in which all must co-operate to find a remedy. There was a growing desire to bring discovery and practice closer together, and nowhere was this more necessary than in medicine. The greatest sufferers from the gap were the working people: they paid a very large proportion of their income for medical service and were not quite getting value for money. There was not yet the right organisation for getting the right results, the service, with its long waits at institutions and its failure to include women and children was not organised for the present generation. What I resent more than anything else, said Mr Bevin, is the discrimination between those with one salary and those with another. Why a man should be classed as proletariat at £5 a week and as lower middle class at £5 1s passes my comprehension.

Mr Derek Curtis Bennett in the final speech of the evening spoke of what everybody owed—"not only in pounds, shillings and pence"—to the medical profession.

Dr Christopher Addison on whom a peerage was conferred in the Coronation Honours, has taken the title of Baron Addison of Stallingborough in the county of Lincoln

Salvation Army Mothers Hospital

Lady Baldwin, on June 8th opened a new isolation block at this hospital in Lower Clapton road. The block cost £8785

Disposal of the Dead

The sixth joint conference of the National Association of Cemetery and Crematorium Superintendents and the Federation of Cremation Authorities in Great Britain will be held at Torquay from June 28th to July 1st

West London Hospital

Prince Arthur of Connaught presided at the annual meeting of subscribers of this hospital and stated that 4411 in patients were received last year. Maintenance alone amounted to £65 300. The new buildings are to be officially opened by Queen Mary on Oct. 18th and will be named the Silver Jubilee extensions

St Thomas's Hostel for Babies Kennington

On June 7th Princess Helena Victoria opened the new nurses home attached to this institution. She also received purses towards the £6,000 which is the cost of the building

Lady Tata Memorial Grants and Scholarships

The trustees of this fund have awarded scholarships for research in blood diseases with special reference to leukaemia to Dr Jørgen Bloel (Aarhus Denmark) and Dr Edoardo Storti (Pavia, Italy). They have also awarded grants for research expenses or for scientific assistance to the following: Dr Julius Engelbreth Holm (Copenhagen), Prof Karl Järnval (Budapest), Prof James McIntosh (London), Prof Charles Oberling (Paris), Prof Eugene Opie and Dr Jacob Furth (New York), Dr Georg Weitzmann (Leipzig) and Dr Lucy Wills (London)

British Association of Radiologists

After holding its first annual general meeting at Birmingham in 1935 and its second at Manchester in 1936 this association came to London for its third annual meeting which was held on June 11th and 12th at the Reid Knox Hall, Welbeck-street under the presidency of Prof J. M. Woodburn Morrison. The discussions are largely reported on an earlier page. On the evening of the 11th some ninety members and their friends dined together at the Hotel Splendide Piccadilly, the diagnostic and the therapeutic groups were both well represented. In proposing The Association Mr S. J. Worsley acting principal of London University spoke of its aim to combine the conservative outlook of medicine with a quick adaptation to new ideas. London University he said still had the only chair of radiology in this country and its diploma of medical radiology was now a going concern, some eight of the London school being prepared to take part in preparing for it. Dr R. M. Beath who will preside next year when the Association meets in Belfast paid a tribute to the previous occupants of the presidential chair who had done so much to improve the education and status of the radiologist. He mentioned the decision to establish a higher diploma and an intention some time to found a college of radiology. Dr R. L. Roberts (Liverpool) proposed "The Guests" mentioning Miss Skinner who had generously endowed a lectureship. Sir Cuthbert Wallace who was president of a college on whose regulations for the fellowship the Association had moulded its own, and Dr Lyschols of Stockholm who was not only the fountain head of radiology in Sweden but also an expert yachtsman and engineer. Sir Walter Langdon Brown, in replying suggested possible mottoes for the Association amongst them (1) What shadows we pursue (2) For now we see it rough a plain darkly. The President concluded by giving as an extra toast "Absent Friends" with a special message to Mr Thurstan Holland prevented by his health from attending. Other guests present were Mr. Rock Carling and Mr. Dickson Wright

Appointments

- BAKER, ALFRED H. M.D. Bell., F.R.C.S. Eng. Temporary Assistant Surgeon to the Elizabeth Garrett Anderson Hospital
- BRUCHAMP, GUY M.B. Birm. Hon. Physician to the Charterhouse Rheumatism Clinic London
- BURGE, H. M.D. Lond., F.R.C.S. Eng. Resident Surgical Officer at King George Hospital, Ilford
- COOPER, H. G. N., B.M. Oxon. F.R.C.S. Eng. Resident Surgical Officer at the Ancoats Hospital, Manchester
- HILL, GLADYS M.D. Lond. F.R.C.S. Eng. M.C.O.G. Temporary Assistant Obstetric Surgeon to the Elizabeth Garrett Anderson Hospital
- IRVINE, DUNNAN M.R.C.S. Eng. Hon. Anaesthetist to the Charterhouse Rheumatism Clinic London
- JONES, L. E. M.B. Lond. F.R.C.S. Eng. Resident Surgeon Officer at the Queen's Hospital, Birmingham
- JONES-DAVIS, T. E., M.A. Camb., M.R.C.P. Lond. Assistant Medical Officer for Surrey
- JONES, A. A. B.Sc. N.Z., F.R.C.S. Eng. Assistant Aural Surgeon at St. Bartholomew's Hospital
- KANE, WITTENBERG A. M.R.C.S. Eng. Lady Assistant Medical Officer for Coventry
- MACKIE, J. R. M.D. Aberd. M.R.C.P. Lond. Medical Registrar at King George Hospital, Ilford
- MOLL, H. H. M.D. Rome M.R.C.P. Lond. Hon. Physician to the Leeds General Infirmary
- SCOWEN, E. F. M.D., M.R.C.P. Lond. Assistant Physician and Assistant Director to the Medical Professorial Unit at St. Bartholomew's Hospital
- SHILLING, CLIVE, B.M. Oxon. Physiotherapist to the Victoria Hospital for Children Chelsea
- Princess Alice Memorial Hospital, Epsom—The following appointments are announced—
- FERGUSON, H. G., M.B. Lond., F.R.C.S. Edin. Hon. Surgeon
- EWELL, A. G. M.D. Aberd., D.P.H. Hon. Assistant Physician and
- SKOULL, L. A. H. M.B. M.R.C.P. Lond. F.R.C.S. Edin. Hon. Assistant Surgeon
- Queen Charlotte's Maternity Hospital—The following appointments are announced—
- MEEK, EDWARD, M.D. Toronto L.B. Dubl. Senior Resident Medical Officer
- LLOYD, OSWALD M.R.C.S. Eng., Assistant Resident Medical Officer
- EVANS, E. P. M.R.C.S. Eng. Resident Anaesthetist and District Resident Medical Officer and
- GIBB, ARN. M.B. Edin., Resident Anaesthetist

Vacancies

For further information refer to the advertisement columns

- Aberdeen Fawcett Research Institute—Biochemist £250. Also Med. Grad. to assist in Research £25-45 per month
- Ashdon under-Lyne District Infirmary—H.B. at rate of £150
- Aylesbury H. S. £180
- Barnetley District Hosp. and Dispensary—Jun. H.S. also H.P. each £240
- Bath Royal United Hosp.—H.P. at rate of £150
- Belfast County Hosp.—Second H.S., at rate of £150
- Berrendon Borough—A. at Manchester U. £590
- Birkenhead Education Committee—Asst. School M. O. £200
- Birmingham and Midland Eye Hosp.—H.S., at rate of £150 to £160
- Birmingham Queen's Hosp.—Res. Anaesthetist £70-£100
- Birmingham, Selly Oak Hosp. and Infirmary—Supt. Matron £150. Also Jun. M.O.'s for Hospital each at rate of £200
- Board of Education—Medical Officer £738
- Boston Royal Infirmary—Two H.S. each at rate of £160
- Boston Townley Hosp. Farnworth—A. at M.O. £255
- Brighton New Sussex Hosp. for Women—H.S., £110
- Brighton, Royal Sussex County Hosp.—Cas. H.S. £120
- Bristol Royal Infirmary—Radio-diagnostician (Locum) at rate of £200
- Bristol University Medical School, Duncroft Road H.—Cas. O., at rate of £150
- British Red Cross Society, Clinic for Rheumatism, Fido-place N.—Hon. Dental Surgeon
- Cambridge Addenbrooke's Hosp.—Res. Anaesthetist and Emergency O. at rate of £150
- Cardiff City Lodge Hosp.—Jun. H.S. M.O. £150
- Cardiff University College of Health and Hygiene—Asst. Lecturer in Hygiene
- Carlisle Cumberland Infirmary—H.S. at rate of £15
- Casual Hosp. for Functional Nervous Disorders, Bexleydean, Easthurst Kent—Med. Director £120-£150
- Charing Cross Hosp. H.C.—Hon. Orthopaedic Surgeon. Also Hon. Clin. Asst. to Ray and Electrotherapy Dept.
- Chelmsford C.C.—Temporary Tuber G., £1 per week
- Chelmsford General and Lye Hosp.—H.S. £150
- Chelmsford and North Parishes Royal Hosp.—Res. Surg. O. £250. Also H.S., at rate of £150

Coventry and Warwickshire Hosp.—H.P., £160, Res H.S., and Cas O each £150
 Deconport Prince of Wales's Hosp.—Jun. H.S. at rate of £120
 Durham County Hosp.—H.S. at rate of £150
 Eastbourne Royal Eye Hosp. Percy road.—H.S., £100
 Elizabeth Garrett Anderson Hosp., Euston-road N.W.—Hon Asst Phys. Also H.P., First and Second H.S.s, and Obstet. Asst. each at rate of £50
 Eekina Hosp. for Sick Children, Southwark S.E.—H.P. Locum £4 4s weekly
 Exeter Royal Devon and Exeter Hosp.—H.S., at rate of £150
 Federated Malay States Central Mental Hosp.—Asst. Med Supt £340
 Gateshead Mental Hosp. Stannington Northumberland.—Asst M.O., £350
 Gloucestershire Royal Infirmary and Eye Institution.—H.S. and H.P. each at rate of £150
 Halifax Royal Infirmary.—First H.S., at rate of £200
 Herefordshire General Hosp.—Res Surg O and H.P. at rate of £150 and £100 respectively
 Hospital of St John and St Elizabeth 60 Grove End road N.W.—Res H.P. at rate of £100
 Hosp. for Sick Children Great Ormond street W.C.—Res M.O. for Country Branch at rate of £200
 Hosp. for Tropical Diseases 25 Gordon street W.C.—Ophth Surg Hosp. for Women, Soho square W.—Hon Clin Assts
 Huddersfield St Luke's Hosp.—Res M.O., £230
 Hull Beverley-road Institution.—Asst M.O.s, £350
 Hull Royal Infirmary.—Second H.P. and H.S. to Ophth and Ear Nose and Throat Depts, each at rate of £150
 Ipswich East Suffolk and Ipswich Hosp.—Cas O, H.S. to Orthopaedic and Fracture Dept, and H.S. to General Surgeon and Genito Urinary Surgeon, each £144
 Kettering and District General Hosp.—H.S. and H.P. at rate of £175 and £150, respectively
 Kidderminster and District General Hosp.—Jun H.S. £100
 King's College Hosp. Denmark hill, S.E.—Asst. Neurologist
 Leeds Killingbeck Sanatorium.—Asst Res M.O., £250
 Leicester Royal Infirmary.—Pathologist (Locum) £10 weekly
 Liverpool Cleaver Sanatorium for Children Heswall.—Res M.O. £300
 London Chest Hosp. Victoria Park, E.—Asst Tuberculosis O., £600
 London University.—Examinerships
 Manchester Ancoats Hosp.—Cas O £250 Also H.S. to Ear Nose and Throat Dept at rate of £100
 Manchester Ear Hosp. Grosvenor square.—Res H.S., £120
 Manchester Royal Children's Hosp. Pendlebury.—Res M.O. and Res H.S. at rate of £150 and £100 respectively
 Manchester Royal Infirmary.—Technical Asst for Clinical Laboratory Work, £200
 Marie Curie Hosp., 2, Fitzjohn's-avenue N.W.—Asst Director from £500
 Middlesbrough North Riding Infirmary.—Sen H.S. and Third H.S. at rate of £175 and £140 respectively
 Middlesbrough County Council.—Visiting Dental Surg 2 guineas per session
 Northampton General Hosp.—H.S. at rate of £150
 North Middlessex and County Hosp., Edmonton.—Asst M.O. at rate of £350 Also Jun Res Asst M.O. at rate of £250
 Norwich Infirmary.—Res Asst M.O. £350
 Norwich, Norfolk and Norwich Hosp.—Gen H.S. H.S. to Orthopaedic Dept Also Cas O, each £120
 Nottingham General Hosp.—Res Cas O and H.S. to Ear Nose, and Throat Dept each at rate of £150
 Oldham Municipal Hosp.—Res Asst M.O. at rate of £200
 Oldham Royal Infirmary.—Two H.S.s Also Cas O and H.S. to Fracture Dept each at rate of £175
 Plymouth Prince of Wales's Hosp.—H.S. and H.P. at rate of £120
 Pontefract General Infirmary.—Jun Res M.O., at rate of £150
 Port of Spain City Council.—M.O.H. £800
 Preston and County of Lancaster Royal Infirmary.—Two H.S.s each at rate of £150
 Princess Louise Kensington Hosp. for Children St Quintin avenue W.—H.S. at rate of £120-£150
 Queen's Hosp. for Children Hackney road E.—Additional Visiting Anaesthetist 1 guinea per attendance
 Queen Mary's Hosp. for the East End Stratford E.—Cas and Out Patient O., at rate of £150 Also Anaesthetist
 Reading, Royal Berkshire Hosp.—H.S. Also Cas O, each at rate of £150
 Rotherham Hosp.—H.S. for Ophth and Ear Nose and Throat Depts, £120
 Royal National Orthopaedic Hosp.—Two H.S.s for Country Branch each at rate of £150
 St George's Hosp. S.W.—Asst Physician
 St Mary's Hosp. W.—Cas H.P. at rate of £150
 Sheffield Children's Hosp.—H.S. £100
 Sheffield Royal Hosp.—Cas O at rate of £150
 Shrewsbury Royal Salop Infirmary.—Res H.S. at rate of £160
 Smethwick County Borough.—Sen Asst M.O.H. &c £750
 Also Asst. M.O.H. &c. £350
 Southampton Royal South Hants and Southampton Hosp.—Cas O and Res Anaesthetist and H.S. to Ear Nose and Throat Dept, each at rate of £150
 South Eastern Hosp. for Children Sydenham S.E.—Two R.M.O.s each at rate of £100
 Stoke-on-Trent Burslem Haywood and Tunstall War Memorial Hosp.—Res H.S. at rate of £175
 Stoke-on-Trent Longton Hosp.—H.S. £160
 Sunderland Royal Infirmary.—Res Surg O £250 Also Cas O £150
 Swansea General and Eye Hosp.—H.S., at rate of £150
 Tunbridge Wells Kent and Sussex Hosp.—H.S. and Cas O £130

Warwick King Edward VII Memorial Sanatorium Hertford Hill. Jun Asst M.O. £250
 Weir Hosp., Crore road Balham S.W.—Jun Res M.O. £140
 West Ham Mental Hosp., Goodmayes.—Jun Asst M.O., £350
 West Middlessex County Hosp. Isleworth.—Surgeon Grade I, £1000
 Westminster Hosp., Broad Sanctuary S.W.—Dental Surgeon
 Whips Cross Hosp., Leytonstone F.—Asst Res M.O., £300
 Willesden General Hosp., Harlesden road N.W.—Cas O at rate of £100
 Winchester Royal Hampshire County Hosp.—H.S. at rate of £125
 Wolverhampton Royal Hosp.—Hon Asst Surgeon and Hon Asst Gynaecologist
 Workop Victoria Hosp.—Jun Res at rate of £170
 Wrexley and West Drayton Urban District.—M.O.H. £120

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning

SOCIETIES

ROYAL SOCIETY OF MEDICINE 1, Wimpole-street W
 SATURDAY June 26th
 Orthopaedics provincial meeting in Exeter 11 P.M.
 Demonstration of Cases at the Prince's Elizabeth Orthopaedic Hospital

MEDICO LEGAL SOCIETY

THURSDAY June 24th—8.15 P.M. (Mansion House 96 Portland place W.), annual general meeting Vice Alice Raven Prejudicial Assumptions in Poison Cases

BRITISH PSYCHOLOGICAL SOCIETY

Medical Section
 WEDNESDAY June 23rd—8.30 P.M. (11 Chandos-street W.), Dr J. L. Halliday The Approach to Asthma

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

NATIONAL COUNCIL FOR MENTAL HYGIENE

TUESDAY June 22nd—3 P.M. (26 Portland place W.) annual general meeting 4.30 P.M. Dr Henry Jones Mental Hygiene in the Home

NATIONAL TEMPERANCE HOSPITAL Hampstead road N.W.

THURSDAY June 24th—9 P.M. Sir Arthur MacNalty The Doctor in Politics and Diplomacy

BRITISH POSTGRADUATE MEDICAL SCHOOL Duane-road W.

TUESDAY June 22nd—4.30 P.M. Dr D. Hunter Occupational Diseases

WEDNESDAY—12 noon clinical and pathological conference (medical) 2 P.M. Mr F. J. King Ph.D. Carbohydrate Metabolism and Diabetes 3 P.M. clinical and pathological conference (surgical)

THURSDAY—2.15 P.M. Dr Duncan White Radiological Demonstration 3 P.M. operative obstetrics

FRIDAY—3 P.M. clinical and pathological conference (obstetrics and gynaecology)

Daily 10 A.M. to 4 P.M. medical clinics surgical clinics and operations obstetrical and gynaecological clinics and operations

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION 1 Wimpole street, W.

MONDAY June 21st to SATURDAY June 26th—WEST END HOSPITAL FOR NERVOUS DISEASES Welbeck street W. Afternoon M.R.C.P. course in neurology—CHelsea Hospital for Women, Arthur-street S.W. All-day course in gynaecology—LONDON CHEST HOSPITAL, Victoria Park Wed and Fri 6 P.M. M.R.C.P. course in heart and lung diseases—Brompton Hospital, S.W. Twice weekly 4 P.M. M.R.C.P. course in chest diseases Open only to members of the fellowship

HOSPITAL FOR EPILEPSY AND PARALYSIS Maida Vale W.

THURSDAY June 24th—3 P.M. Dr Blake Pritchard Demonstration

ST MARY'S HOSPITAL W.

TUESDAY June 22nd—5 P.M. (Institute of Pathology and Research) Dr W. E. Gye Recent Work on Cancer

HOSPITAL FOR SICK CHILDREN Great Ormond-street W.C.

THURSDAY June 24th—2 P.M. Mr Eric Lloyd Spinal Deformities in Children 3 P.M. Dr A. Signy Interpretation of Faecal Bacteriology

Out patient clinics daily at 10 A.M. and ward visits at 2 P.M.
 SOUTH WEST LONDON POST GRADUATE ASSOCIATION
 WEDNESDAY June 23rd—12.30 P.M. Visit to Parks, Davis and Co Hounslow

NOTES, COMMENTS, AND ABSTRACTS

KIPLING AND DOCTORS*

By VICTOR BONNEY M.S.

No writer has depicted the technical and spiritual aspects of medicine so understandingly as Rudyard Kipling and therein medical men are in debt to him for ever. Unlike the problems of other callings those presented to the doctor concerned as they are with the shifting phenomena of life are contained in no fixed framework of laws whereby they may be measured and solved, so that for an outsider to conceive and don the mental response to them requires not only great imagination but profound observation and thought as well. Kipling's understanding is assignable firstly to that insatiable craving for inner knowledge which was so striking a part of his nature and which compelled him to observe minutely and study the details of every sort of work and secondly to his power of vision which perceived in all work a spiritual significance far greater than the work itself. He himself has described to us how in his earlier days he was by force of circumstances introduced into intimate relation with men of many varied callings

"and in that Club and elsewhere I met none but picked men at their definite work—Civilians Army Education Canals, Forestry Engineering Irrigation Railways Doctors and Lawyers, and each talking his own shop. It follows then that the show of technical knowledge for which I was blamed later came to me from the horse's mouth—even to boredom.

But medicine had I think a special attraction for Kipling probably because its subtle problems challenged his deeply inquiring mind. In *Something of Myself* two doctors have specific mention. Dr Conland the best friend I made in New England, and the late Sir John Bland Sutton with whom as readers of the biography will remember Kipling pursued an unwilling cock to verify the workings of its gizzard. Bland Sutton was a very remarkable person avid for the acquirement of knowledge especially if the knowledge concerned matters odd and unthought-of and he was moreover gifted with the faculty of viewing things from an angle quite different from that used by the ordinary man. He possessed in short the very type of mind to interest and attract a mind like Kipling's and an old-standing and intimate friendship subsisted between them. He is introduced as Sir James Belton into the story *The Tender Achilles*.

"In the few precisely articulated words one could see Sir James himself—his likeness in face and carriage to the hawk-headed Egyptian god the mobile pursed lips and the stillness of the wonderful hand at his side.

The portrait is quite unmistakable to those who knew this famous surgeon. The St. Peppercott's of the tale is the Middlesex Hospital to which Bland Sutton gave a fully equipped pathological institute. His bust stands in the museum which forms a part of it and underneath the bust is this epitaph written by Kipling:

Adapted from a paper read before the Kipling Society on June 13th 1937

JOHN BLAND SUTTON

A SEEKER AFTER KNOWLEDGE THAT SHOULD
AVERT OR MITIGATE PAIN

*Labouring throughout life to this end
he gave greatly of his substance that
the search should continue in this place.*

His Knowledge of Medicine

Evidences of Kipling's knowledge of the technical side of medicine are numerous. For instance from *The Spies March* which deals with medical men in relation to infectious disease, take the following verse:

"Go where his pickets hide—
Unmask the shape they take
Whether a gnat by the waterside
Or a stinging fly in the brake
Or filth of the crowded street
Or a sick rat limping by
Or a smear of spittle dried in the heat
That is the work of a spy!

In *'A Deathbed'* the last two lines of the first verse accurately describe the outward signs of malignant disease of the throat or tongue

"This is a gland at the back of the jaw—
And an answering lump by the collar bone

Witness his reference to bacteriology in *'A Trans-lation'*.

Some cultivate in broth impure
The clients of our body—these
Increasing without Venus' cure
or cause disease"

In *Marklake Witcher* one of the characters is René Lannec, the French physician who by his invention of the stethoscope laid the foundation of our knowledge of diseases of the heart and lungs. René in the story is a prisoner of war on parole and Philadelphia tells Dan and Una how she watched René demonstrating his little wooden trumpet to Jerry the local seller of charms and cures. Jerry listening to René's chest says:

But unless I vo a buzzin in my ears Mosheur Lanark you make much about the same kind of noises as ol' Gaffer Macdon, but not quite so loud as young Copper—It sounds like breakers on a reef a long way off. Com' prunny! "Perfectly replies René I drive on the breakers. But before I strike I shall save hundreds, thousands millions perhaps, by my little trumpets.

The earliest stethoscopes were made of wood and I were shaped like a short trumpet. Jerry's picturesque simile exactly describes tubular breathing and how fine is René's reply!

But the fullest example of the accuracy of his medical knowledge is to be found in *The Ballad of Boh Da Thono*—I can remember

Boh Da Thono was a warrior bold;
His sword and his rifle were boomed with gold
And the Peacock Banner his helmet bore
Was stiff with bullion but softer with gore
He shot at the strong and he slashed at the weak
From the Salween scrub to the Chindwin creek
He crucified noble he sacrificed mean
He filled old ladies with keroseene!

He is pursued by Captain O'Neil of the Black Tyrone:

And his was a company seventy strong
Who hustled that dissolute chief along.

By Robert Bell Library

U. S. S. Medical College

O'Neil and his men eventually overtake him

"And at last they came when the Daystar tired,
To a camp deserted—a village fired,
A black cross blistered the morning gold,
But the body upon it was stark and cold
The wind of the dawn went merrily past,
The high grass bowed her plumes to the blast
And out of the grass on a sudden broke
A spurtle of fire, a whorl of smoke—
And Captain O'Neil of the Black Tyrone
Was blessed with a slug in the ulna bone—
The gift of his enemy Boh Da Thone "

Now mark Kipling's medical knowledge

"Now a slug that is hammered from telegraph wire
Is a thorn in the flesh and a rankling fire "

The wound suppurates as it would be sure to do

"The shot-wound festered—as shot-wounds may
In a steaming barrack at Mandalay
The left arm throbbed and the Captain swore
'I'd like to be after the Boh once more !' "

Septic fever supervenes and he becomes delirious

"The fever held him—the Captain said
'I'd give a hundred to look at his head !' "

Babu Harendra hears him and hankers for the rupees but is too cowardly to attempt to earn them. The Captain is invalided, goes to a hill station and takes him a wife

"And she was a damsel of delicate mould,
With hair of sunshine and heart of gold,
And little she knew the arms that embraced
Had cloven a man from the brow to the waist
And little she knew that the loving lips
Had ordered a quivering life's eclipse,
Or the eye that lit at her lightest breath
Had glared unawed in the Gates of Death
For these be matters a man would hide,
As a general rule from an innocent bride "

Meantime Babu Harendra is wending his way in the rearmost cart of the Government bullock tram when the Boh and his followers attack the convoy. There is a fierce fight with the escort

"But Fate had ordained that the Boh should start
On a lone hand raid on the rearmost cart,
And out of that cart, with a bellow of woe
The Babu fell—flat on top of the Boh !

For years had Harendra served the State,
To the growth of his purse and the grith of his *pét*
There were twenty stone, as the tally man knows,
On the broad of the chest of this best of Bohs
And twenty stone from a height discharged
Are bad for a Boh with a spleen enlarged
Oh ! short was the struggle,—severe was the shock—
He dropped like a bullock—he lay like a block,
And the Babu above him, convulsed with fear,
Heard the labouring life breath hissed out in his ear "

Repeated attacks of malaria cause great enlargement of the spleen, and a large proportion of the natives of malarial districts are so affected. Thus is a perfect picture of extensive rupture of the spleen with severe internal hemorrhage causing rapid death. Harendra then hacks off the head of the Boh, and sends it in a packing case to O'Neil with the finest example of a Babu's letter ever rendered into verse asking for the rupees. The case arrives at breakfast time

"Their breakfast was stopped while the screwjack and hammer
Tore wax cloth, split teak wood, and chipped out the dammer,
Open eyed, open mouthed on the napery's snow,
With a crash and a thud rolled—the Head of the Boh !

O'Neil's wife who is with child four months (this is very cleverly expressed) is terribly shocked and faints. From time immemorial it has been believed that impressions strongly stamped on the mind of a pregnant woman may imprint a physical simulacrum on the child, and at intervals cases are reported in the medical journals lending colour to the belief, as for instance, when a woman frightened by a one armed man brings forth a child with congenital absence of an arm. In this instance the child is born with a superficial birth mark, or congenital naevus, on its shoulder, resembling the contour of the Boh's head.

"And this is a fiction ? No, go to Simoorie
And look at their baby, a twelve month old Hour
A pert little Irish-eyed Kathleen Mavourneen—
She's always about on the Mall of a mornin'—
And you'll see, if her right shoulder strap is displaced,
Thus *Gules* upon *Argent*, a Boh's head, *erased* ! "

As in heraldry "*gules*" means red and "*argent*" white, the description of the red birth mark against the child's white skin is very apt. The term "*erased*" is also used in heraldry where an object, such as a head, is separated from the body it belongs to leaving a jagged edge, and the Boh's head *was* so separated. But Kipling also intended the word to be interpreted in a second sense. At the time the poem was written these birth marks were usually treated by obliterating or *erasing* them by electrolysis, and because the position of this one would render it specially unsightly electrolysis would have been almost surely carried out. It is a good example of Kipling's genius for playing on the double meaning of a word and blending the parallels special to two apparently unrelated subjects.

His Conception of the Doctor's Duty

The dominant force that lies behind medical work is often ascribed to conscious benevolence, whereas it is something quite different. Medicine disciplines its followers—not by order or drill as a regiment disciplines its men, but by the power of its traditional aims. The result, however, is the same—an automatic habit of thought and action which continues to work long after conscience and courage have gone by the board, and the doctor who struggles out of his sick bed to see a patient far less ill than himself, or from an island shieling to the boat bound for the mainland, carries in his arms a case of typhus, or allows a mosquito known to be infected with yellow fever to bite him, in order that the disease may be further studied, is embarrassed when his deed is lauded on the score of humanity and courage. He knows that its mainspring is a habit of duty, so long engrained, that it has become subconscious. Thus and the nature of the experiences through which the doctor's mentality is attained were well known to Kipling, as the following unpublished verse shows

"Such as in Ships and brittle Barks
Into the Seas descend,
They see the glories of the Lord
And wonders without end
But such as heal the sick and maimed,
Do meet more manifold
Amazements, in one midnight watch,
Than all the oceans hold "

You will observe that he quotes the first two lines from a previous poem of his.

In 1908 he delivered an address to the students of the Middlesex Hospital which in eloquence and understanding is by far the finest appreciation of the medical profession ever written, and almost every

sentence of it might be used as a text on which to found a dissertation. He described doctors as

"Your permanently mobilized army which is always in action always under fire against Death and whose business is

"to make the best terms you can with Death on our behalf to see how his attacks can best be delayed or diverted and when he insists on driving the attack home to take care that he does it according to the rules of civilized warfare

The same conception of the doctor's function recurs in the following unpublished verse written I believe many years afterwards

"Jan dies too soon, beside his work half planned
His days are counted and reprieve is vain.
Who shall entreat with Death to stay his hand;
Or cloke the shameful nakedness of pain?

The last line is very wonderful. The speech went on to recite the obligations of the profession

"In all times of flood fire famine plague pestilence battle murder or sudden death it will be required of you that you report for duty at once

and then its privileges

"If you fly a yellow flag over a centre of population you can turn it into a desert. If you choose to fly a Red Cross flag over a desert you can turn it into a centre of population towards which as I have seen men will crawl on hands and knees

You must remember that the South African War was only six years distant. He ended thus

"I do not think I need stretch your patience by talking to you about the high ideals and lofty ethics of a profession which exacts from its followers the largest responsibility and the highest death rate—for its practitioners—of any profession in the world. If you will let me I will wish you in your future what all men desire—enough work to do and strength enough to do the work

What finer wish could be uttered to an audience of young men?

Of all doctors those who devote themselves to research are I think the highest type for not only are the rewards small, but years of strenuous thought and labour may be expended only to find that the path followed to seek for knowledge leads nowhere or comes to a blind end. Kipling has voiced this as only he could voice it—these are the lines, unpublished as yet

"Send here the bold the seekers of the way—
The passionless the unshakable of soul
Who serve the inmost mysteries of man's clay
And ask no more than leave to make them whole

The interest Kipling took in medicine covered not only its present but its past and its future. In *Our Fathers of Old* he sings of the ancient physician astrologers:

"Yet when the sickness was sore in the land
And neither planets nor herbs availed
They took their lives in their lancet hand
And oh what a wonderful war they waged!
None too learned but nobly bold
Into the fight went our fathers of old"

These held that the universe and all it contains is one in ultimate essence and that happenings in the whole are reflected in the individual man who forms a part of it. In the address that he gave to the Royal Society of Medicine in 1928 he dwelt on this doctrine and looking into the future said

"It is then arguable that we may still mistake secondary causes for primary ones, and attribute to instant and visible agents of disease unconditioned activities which

in truth depend on some breath drawn from the motion of the universe—the entire universe revolving as one body (or dynamo if you choose) through infinite but occupied space? The idea is wildly absurd? Quite true. But what does that matter if any fraction of an idea helps towards mastering even one combination in the great time locks of Life and Death?"

In the labyrinth of knowledge through which we thread our way science has already unlocked many doors, but a myriad remain through which we must pass and who shall assert where or where not we may come to at last?—No doctor

OVERFEEDING AND PROTEIN METABOLISM

A GROUP of workers at the institute of physiology of Glasgow University have recently recorded the results of experiments designed to throw light on two important points—the effects of overfeeding on metabolism and the relative values to human adults and young people of the proteins of boiled and raw milk.¹

In 1904 Chittenden of Yale startled physiologists with his *Physiological Economy in Nutrition*, in which he maintained that the 15–18 grammes of nitrogen or 100 g of protein considered by Voit and other early workers to be a minimum daily requirement was in fact very much more than was needed for the repair of waste tissues, and that the excess, although the non-nitrogenous part was available for energy requirements, mainly passed from organ to organ or from tissue to tissue on the way to elimination and we can fancy that liver and kidneys must at times rebel at the excessive labour they are called upon to perform.

The method of experiment adopted in Glasgow by Dr. Guthbertson and his six fellow subjects who varied in age from 19 to 35 and in weight from 68 to 87 kg (under 0 to 14 st.) was to reach a stable output of urinary nitrogen on a self-selected basal diet of white and brown bread, 100 g of fresh butter cheese 500 ml raw milk, apple jelly, and raw apples. The water intake was kept constant. Some subjects received lettuce and tomato in addition. The daily protein intake varied from 0.82 to 1.21 g per kg of body weight, and the calories supplied from 34 to 62 per kg. A stable condition having been reached the excess ration was superimposed. It consisted of either 1000 ml of raw or boiled milk or in a further series beef lactose and butter with water this being dissimilar from the milk supplement only in the nature of the protein. An attempt to use a soya preparation as source of extra protein was closed after five days because of difficulty in consuming it.

All seven subjects showed a large retention of both nitrogen and sulphur after taking the extra food. The difference between raw and boiled milk was not significant either after a one-day surfeit or after a surfeit prolonged for eight days (two subjects only). Subject 5, in the longer experiment, showed decreasing retention as the experiment progressed. As he was 35 years of age he may be presumed to have finished growing but his younger companion who was only 19 seems to have made permanent use of the extra protein. A substantial but less retention of nitrogen was observed with beef and with the soya bean preparation. It is worth noting that the calcium retention was for raw or boiled milk only about 6 per cent. of the excess ingested and the authors point out that their experiments have no reference to the general merits of raw and boiled milk, but only to the relative retention of protein from them.

Further experiments were directed to making clear the relative protein-saving effect of fat and carbohydrate. It is obvious that the thermodynamic and work-output requirements of the body can only be

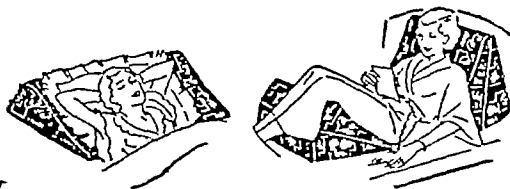
¹ Guthbertson, D. P., McCutcheon, A., and Munro, H. N. (1937) *Biochem. J.* 31, 851. Guthbertson and Munro 1942, p. 691.

met by the provision of combustible material. Fats, carbohydrates, and proteins will all burn, and there is some ground for the view that intake of protein might be reduced to that required for repair of wear and tear in the body or that amounts above this might be retained for future use, if either fat or carbohydrates were supplied in greater amount than is required to maintain body-weight. Apparently the only work showing the relative effect of addition of fat and carbohydrate to an apparently adequate diet is that of Voit in 1890. The present authors find that the effect of carbohydrate in sparing already metabolised protein is about half as much again as that of fat, but it seems that fat was more readily acceptable.

These investigations carried out on and by human subjects who chose and thrived on a basal diet on which they reached equilibrium are of greater value to the dietitian than similar experiments on the lower animals which have to make the best of what they can get and whose nervous systems are less affected by fads or idiosyncrasies. The diets chosen are hardly typical of the food of people—certainly not of medical students—in these islands and the subjects were few. The only exercise they took was short and fairly uniform walks which may partly account for the rather low diet which satisfied them. Allowing these criticisms, the important fact is established that the human system can, when circumstances permit of a rather fuller meal than usual, store for future use some of the extra "goodness" taken in. Further, if one cannot afford extra first-class protein one may do well to take extra fat and carbohydrates, in fact, a lot can be done by eating bread and butter. The stored nitrogen may be distributed over the body, but Outhbertson and his collaborators incline to think that much of it is kept in the liver.

AN ADJUSTABLE BED CUSHION

THE Dunlop Rubber Co., Ltd (Cambridge street, Manchester), now make an adjustable bed-cushion from their Dunlopillo material. It is shaped like a thick wedge but can be bent in the middle so that



BOLSTER

LEG REST

the thicker end of the wedge is doubled in thickness. The accompanying drawings show the cushions used as a bolster (opened out flat) and as a head-rest or leg-rest (one half folded laterally on the other). Dunlopillo cushioning is firm but soft as a support and is described as porous, self ventilating, moth-proof, and dustless. The bed-cushion is 3 feet wide (unfolded).

HOLIDAYS FOR WORKING WOMEN

THE following letter reaches us from the Women's Holiday Fund: "May we once more appeal to those now enjoying all the delights a holiday brings, on behalf of the working women of London living in crowded homes and noisy streets, among dingy surroundings? A short respite from monotonous drudgery and the struggle to carry on in the face of almost overwhelming odds would bring fresh courage and health to many a tired and harassed wife and mother. But the so much needed holiday is beyond her reach even though at times the longing 'to get right away' becomes unbearable. The narrow margin of money for the necessities of life in thousands of poor homes does not allow of such a luxury as a fortnight's holiday. Even by dint of saving a small sum weekly the cost is beyond the means of most

Last year through the help of the Fund which was founded 42 years ago, 1400 women obtained seaside holidays—over 700 took with them babies or small children (under 5 years of age). The society has now two homes of its own for mothers and babies at St Leonard's and Littlehampton, and in addition makes use of other suitable seaside homes and lodgings. The society is making every effort not only to maintain its existing work but to extend it. An urgent appeal is therefore made for donations (however small), so that a still larger number of weary women may have the refreshment of a holiday by the sea. Two pounds will pay for a mother and baby for two weeks."

The appeal is signed by the Bishop of London, the Dowager Countess of Leven and Melville, Sir George Blacker, The Rev. Father Devas, The Rev. J. Scott Lidgett, and Mrs. Alfred Loder, chairman of the executive committee. Donations should be sent to Miss Cooper, Denison House, Vauxhall Bridge-road, S.W.1.

A REVISED LIBRARY CLASSIFICATION

THOSE who regard the international decimal classification as inadequate for medical libraries, and yet hesitate to add to the numerous existing systems by inventing one of their own, will doubtless welcome the second edition of the classification used in the Vanderbilt University Medical Library.¹ It was originally intended for the documentation of a large collection of reprints, a purpose which the international system might have served equally well. As revised for use on the general medical library, however, this classification certainly has merits, though in many ways O. O. Barnard's scheme² seems preferable. An important and new feature is the comprehensive index with over 2000 entries, but the value of this has been considerably reduced by the maze-like collation of the indexed pages.

Births, Marriages, and Deaths

BIRTHS

FLEW.—On June 10th, at Heath street, Hampstead N.W., the wife of Dr J. D. S. Flew of a daughter.
GAYUS.—On June 10th at a nursing home in London to Dr Irene Kenworthy Gayus—a son and daughter.
SOPER.—On June 7th, at High Wycombe Bucks the wife of Flight Lieut R. L. Soper R.A.F. Medical Service of a daughter.
SPICER.—On June 3rd at Kampala, Uganda the wife of Dr J. R. Spicer of a son.

MARRIAGES

GAWNE-SVOBODOVA.—On June 12th, at St Mary's Cadezang-gardens Douglas W. O. Gawne M.B. to Anna Maria Svoבודה daughter of Ladislav Svoבודה, of Popovic, Czechoslovakia.
MORTON-WOODHEAD.—On June 8th, at St Ethelburga's Bishopsgate Harold James Storrs Morton M.D. to Nancy Sybilla Vincent Woodhead of Aldbury Herts.
NEWTON-DAVIES-WHITTAKER.—On June 9th at the Priory Church of St Bartholomew the Great London, Lieut-Col O. Newton Davis M.C. I.M.S. to Mrs Kathleen Mary Whittaker, widow of Squadron Leader J. T. Whittaker, M.C. R.A.F. of Belfast.
WILLIAMS-CROCKER.—On June 10th at Parkstone Hugh Morgan Williams F.R.C.S. to Jean Esmé Crocker, of Parkstone.

DEATHS

COGAN.—On June 9th at Northampton Ico Fyson Cogan, J.P. M.R.C.S. Eng. L.R.C.P. Fdn., in his 89th year.
COLLINSON.—On June 9th at Preston Frederick William Collinson, M.D. F.R.C.S. Edin., in his 81st year.
DAVIDSON.—On June 12th at Guildford George Edward Davidson M.B. Camb. of Shere aged 59.
RIDLEY.—On June 8th at Leicester, Nicholas Charles Ridley R.N. (ret'd) M.B. Lond. F.R.C.S. Eng.
WALDMEIER.—On June 2nd in London Frederick John Waldmeier, L.S.A. Lond. M.R.C.S. Eng.
V.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

¹ A Classification for Medical Literature. Second edition. By Eileen R. Cunningham. Nashville Tenn. Cullom and Gortner 1937. Pp. 104. 52.00.

² See Lancet, 1936 1 991.

ADDRESSES AND ORIGINAL ARTICLES

A STUDY OF CRETINISM IN LONDON

WITH ESPECIAL REFERENCE TO MENTAL DEVELOPMENT AND PROBLEMS OF GROWTH

By AUDREY LEWIS M.D. Adelaide M.R.C.P. Lond.

CLINICAL DIRECTOR AND LECTURER IN PSYCHIATRY MAUDSLAY HOSPITAL, DENMARK HILL, S.E.

With the assistance of

NANCY SAMUEL, B.A. Dip. Psych. Lond.

LATE PSYCHOLOGIST AT THE HOSPITAL AND

JANET GALLOWAY M.A. Edin.

LATE RESEARCH PSYCHIATRIC SOCIAL WORKER AT THE HOSPITAL

The following investigation was undertaken for the purpose of studying the psychological effects of thyroid deficiency in childhood and what benefit substitution therapy provided for the mental retardation. As the material accumulated other questions presented themselves (chiefly concerned with growth) and led to some alteration in the intended method of presentation.

METHOD OF ASCERTAINMENT

For the first problem mentioned above it was desirable to examine patients who had definite retardation; a search was therefore made in the institutions for mental deficiency. The permission of the medical superintendents* of Leavesden Darenth The Manor The Fountain Caterham and Tooting Bec Hospitals made it possible to examine all the patients diagnosed as cretins in these institutions for defectives conducted by the London County Council. As they represented a population selected for defect it was impossible to use them for an assessment of the beneficial results of treatment by the co-operation of a number of physicians attached to voluntary hospitals; a collection of cases diagnosed as cretin or juvenile myxoedema was obtained which was not open to this objection. The bulk of the cases from voluntary hospitals came from two sources—the London Hospital and St. Thomas's Hospital. The latter were outpatients—23 of them—whom Dr. H. Gardiner Hill put at our disposal for this investigation. The records of the London Hospital when searched through for the last thirty five years yielded the names of 40 in patients in whom the diagnosis of juvenile myxoedema or cretinism had been made. Besides the patients from St. Thomas's and the London and those found in the mental deficiency institutions of the L.C.C. others less systematically collected were got from various out-patient departments (King's College The Queen's, Hackney road Paddington Green and the Maudsley Hospitals)*. The Central Association for Mental Welfare was also approached; they supplied a list of patients some of whom were available for examination. It was not possible to be sure that one had by the above means obtained a good sample of all those in London who have suffered from thyroid deficiency during childhood but it seemed possible that the collection would include most varieties of course and treatment as well as of severity of illness. In all, 145 cases were collected of whom 89 were examined. The remainder were either dead (6 cases)

or unavailable for physical and psychological examination in some of those latter where the diagnosis had been beyond question details of their family history, personality &c. were obtained. Ten of the cases examined were rejected because the diagnosis was doubtful or definitely erroneous.

The ages of the cretins tested ranged from 3 to 58 eleven were 12 years old or less, twenty three were more than 12 and less than 21 years old, fourteen were in the next decade (21-30) seventeen between 31 and 40 twelve between 41 and 50 and two were over 50.

INVESTIGATION

The patients were examined physically they were inspected the texture of the skin felt and measurements chiefly of height and hand dimensions; made. In 35 cases the impedance angle was measured by Mrs. M. A. B. Brazier Ph.D. at the Maudsley Hospital. A psychological examination was made in detail by one of us (N.S.): the Binet-Simon test was applied where the degree of deficiency was very great the Merrill Palmer and the Gesell methods of assessing intellectual development were used instead. The Goddard form board the Woodworth Wells substitution test, and manikin vocabulary and reading and writing tests were also employed. The general demeanour of the subject and his attitude towards the examination were recorded and particular note taken of the speed of his performances—e.g. in tying a bow, and carrying out the Goddard form board test. Fuller inquiries were also made by one of us (J.G.) who visited the homes of the patients and obtained from the relatives a detailed history which together with the hospital records gave a fairly complete picture of the patient's personality and development. The family history was also investigated. The condition of the mother in pregnancy the type of birth weight at birth history of fits in infancy and childhood ages of sitting up walking talking teething and the attainment of clean habits and of sexual maturity were among the data collected. Details of speech as regards quality of voice mispronunciation and extent of voluntary usage of speech were also noted. Consideration of many of these details must be excluded here for want of space.

PHYSICAL FEATURES

The familiar signs of the condition were found to be present in differing degrees and combinations. Some of the cases were as typical as the illustrations in text-books others had a characteristic face skeleton and gait but their skin and hair were normal. Those who presented difficulty in diagnosis were either free from nearly all the recognised physical features of the condition or might have been cases of mongoloid deficiency. As regards the latter in only one instance was there still doubt after careful examination the balance of evidence favoured mongolism. The former physically negative cases however raised a difficult problem: were they to be included on the history alone? Inasmuch as some other cases which had been previously diagnosed as cretins were rejected after investigation—e.g. one was found to be a hydrocephalic idiot—it seemed partial to accept all these without present evidence of the condition. On the other hand to exclude them would be to eliminate any case in which treatment had been entirely effective in clearing up the symptoms. A scrutiny of the hospital records written when the patient was first seen and a detailed history from

*We would like to record our warm thanks to the many physicians who so kindly made records and patients available to us.

the parents, made it possible to include these cases—except a case of adult myxœdema. It may be reasonably concluded that all of the patients upon whom the following report is based had at some time in their childhood shown recognisable symptoms of thyroid deficiency.

The hope of correlating amount of treatment with persistence of physical signs proved vain. Except for skeletal changes, the physical features cannot be measured, and are difficult even to rank in order of severity. The amount and continuity of treatment with thyroid can rarely be measured. Such data are therefore unsuitable for statistical analysis. There were other difficulties, which are discussed below in connexion with the effect of treatment and mental development. Such crude comparisons as could be made between treatment and disappearance of physical signs are given below, as well as the data concerning stature (see Table). It was found easier to compare physical measurements with mental measurements than to compare either with amount of treatment.

MENTAL FEATURES

Text-books give meagre descriptions of the mental changes due to thyroid deficiency in early childhood. Slowness is the characteristic insisted on. Still says "Slowness of the mental processes is the most distinguishing mental feature of the cretin. In temper he is usually amiable and placid, not to say stolid. He acquires clean habits, and is not destructive." There is moreover some disagreement as to the effect of adequate treatment on mental development. Fordyce says, for example, that if careful treatment is commenced early and conscientiously continued, the children at the best may become indistinguishable, physically and mentally, from normal children—a view held also by Cockayne and by John Thomson—whereas Still, on this point, says that "when the educational attainments of even the best of them are inquired into, they are obviously below the normal. Some cases are reported to have become perfectly normal, but I think this must be very exceptional." Many authorities agree with Still—e.g., Petterson, and Kimball and Marine. All writers hold that the mental improvement is seldom as satisfactory as the physical, spasticity is regarded as an ominous sign (cf. Rolleston). Some Austrian and Swiss investigators have gone more fully into the mental characteristics of cretins. The endemic form has been the more fully studied and reported in systematic treatises, because of the large material available. De Quervain gives a lively account, tallying with those of other writers. He stresses the slowness of the cretins, their conservatism and need for security, their good memory for places, their tendency to collect and hoard, to imitate others, and to like praise. They dodge trouble, love eating, and show little emotion, except when they have rare and brief outbursts of rage or brood discontentedly. As Maffei pointed out, they are by no means incapable of learning and reasoning, or of utilising general concepts. But such observations cannot be taken as applying necessarily to the sporadic cases of cretinism under consideration in this paper. De Quervain, though he does not go as far as Zondek, draws a distinction between the two forms, and even describes mental differences between cretins who have a goitre and those who have not, he also thinks that many of the more engaging characteristics of the cretins under his care are those of the Alpine peasants in general and are independent of the cretinism, though somewhat coloured by the cretin's optimism.

In the admirably full description given by Gamper this point is stressed, the torpidity and other features of the cretins may be seen in a mild form throughout the local population. The writers emphasise, moreover, that no specific features can be found in the psychic structure and dynamics of cretins which would make recognition of the thyroid deficiency possible from the mental state alone, there is a torpor which is myxœdematous, and a defect, not accessible to thyroid therapy, which is attributable to arrest of cerebral development and changes in cerebral structure. This is also the view of Wagner Jauregg.

In the literature of sporadic cretinism, very little is to be found about the details of the mental changes. Kornfeld, and Lazar and Nobel have made investigations, but it is doubtful whether the cretinism in their cases may not have been of the endemic sort. They found a great delay in the development of motor functions, such as grasping, sitting, and crawling, to this they attributed much of the apparent mental impairment, since the child had not the usual early mastery of means of getting at grips with the environment by his movements, nor, when he did acquire it, had he the curiosity and other stimuli to use it. Lazar and Nobel say they know no case in which treatment has led to complete mental normality. Kornfeld, who carried out intelligence tests on a small number of cases, did not find parallelism between somatic and psychic effects of treatment, and he emphasised that the deficient auditory attention, poverty of ideas and associations, and few volitional acts of the cretin made special pedagogic training necessary if the best intellectual improvement was to be attained, by such training he was able to get improvement in understanding reading, and talking. It seems probable, however, that the benefit from special education here is the same as that obtained in other forms of mental defect, whether general or special, it would not be required if hormone therapy had repaired the intellectual defect as well as it does the physical. Bronstein and Brown examined 20 children, and found the intelligence quotient to be below 70 in all but 2. Kimball and Marine considered that with adequate treatment cretins might reach a mental age of eight years.

In the investigation here reported, a description of the personality was first arrived at from direct observation of the patients during examination, and from detailed discussion of their traits with their parents, siblings, or others—e.g., nurses and doctors who knew them well. Often information was obtained from more than one such source.

The following description of one of the patients is a typical account of the more striking features of the personality of these people.

"She is exceedingly stubborn. When she is not humoured, or you cross her in any way, she will sit solidly in a chair for hours sulking. She is very slow to understand, or to do what she is told, however simple it is. She has no initiative. You have to tell her to do the same thing day after day. She rarely speaks of her own accord, but will sit mum sooner than ask for anything she wants. She is very particular about being clean and likes to have all her clothes tidy and fresh. She will do whatever you want her to if you promise her a reward. She is very pig-headed and insists on having her own way in spite of all reason."

Slowness was the characteristic most often remarked upon. It is recorded as a salient feature in three quarters of the cases—"painfully slow, no idea of time, you have to prod her all the time." Nearly a third of them were placid, though this depended

somewhat on their circumstances, for example some who at home had been spiteful and bad tempered were contented when they got into the routine of an institution. It was noteworthy that only 4 of the 70 patients were reported to be of a depressive temperament; 2 were prone to attacks of excitement with transient hallucinations when overdozed with thyroid and many flared up if much provoked (when I jawed at her she would fire up' as was said by the mother of one girl, who was mostly content to sit like a block"). Obstunacy was a frequent trait. Note worthy and little remarked upon by any previous writers was the prominence of traits that are more common in obsessional patients than any others—excessive care about order and cleanliness with a proneness to repeat their behaviour. This was conspicuous in at least a quarter of the cases and was in contrast to their general indifference and slowness. Thus one apathetic cretin was described as most painstaking and thorough and slow over everything she does. She must polish the stairs although she has been told not to; she polishes an electric switch in a dark cupboard although it can't be seen. She is always washing herself and her clothes. A few others showed related attributes: they were thrifty or given to hoarding trifles.

Half of them were fairly sociable or friendly. Hypochondriacal tendencies and suspiciousness also occurred but had little or no relationship to the cretinism. Most of the patients showed the foregoing attributes more when they stopped taking their thyroid tablets. Inquiries about personality were made in another 18 patients who were not available for examination but whose medical history was that of unequivocal thyroid deficiency in childhood: of these no less than 15 were reported to be placid or apathetic, and 10 showed obsessional traits.

PSYCHOLOGICAL TESTS

The most important feature of the psychological testing was the estimation of mental age by the customary Binet method confirmed or replaced by the Merrill Palmer test in those too low in the scale to be suitable for Binet testing; in 2 cases the Gesell method of testing infants was employed. The

notorious difficulties in ranking adults by a Binet test would make it desirable to give the scores in terms of 'mental age' rather than intelligence quotient but as 10 of the subjects were less than fourteen years old they could not be included in such

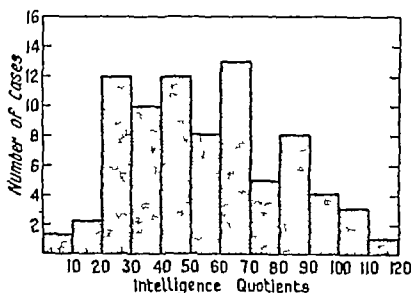


FIG. 1.—Distribution of intelligence as measured by tests, in 70 cretins

a series. It was therefore necessary to grade the subjects according to intelligence quotient. Owing to the unrepresentative method of selection it would not be justifiable to compare the frequency curve of the intelligence quotients in these subjects with that which is obtained when a true sample of the average population is tested. It is however clear from Fig. 1 that, although the number of mentally defective people is high, no less than a fifth of the subjects had intelligence quotients which fell within the range of what is usually called normal—i.e. above 80. Somewhat contrary to expectation there was in the individual cases no more scattering of successes over several years than is usually found when these tests are given to an average population. Certain special tests were however done better or worse than they might be by non-cretinous subjects.

As slowness seemed so striking a feature in these subjects various tests were specially employed because speed was a factor taken into account in scoring them. Of these the chief were the Goddard or Seguin form board the Woodworth Wells substitution test and the numerous Merrill Palmer tests in which time of performance determines the score—e.g. manikin matching cube-pyramid pink tower picture puzzles. By scoring these in terms of mental age it was possible to compare the speed of performance with the general level of intelligence (Fig. 2). In spite of the incompleteness of such a method it gives valuable information confirming the clinical impression and showing that the slowness may be notable in those whose intelligence quotient is not far below normal or is actually normal; consequently such people may in school and elsewhere give an impression of greater deficiency in intelligence than is actually the case (cf. Ziehen). It is also evident that slowness in the performance of intellectual tasks may be greater than that exhibited in ordinary motility. This is in conformity with Kossowitz's observation that there may be remarkable improvement in motility after treatment but it partly invalidates his view that the improvement in motility supplies a measure of the general psychological improvement.

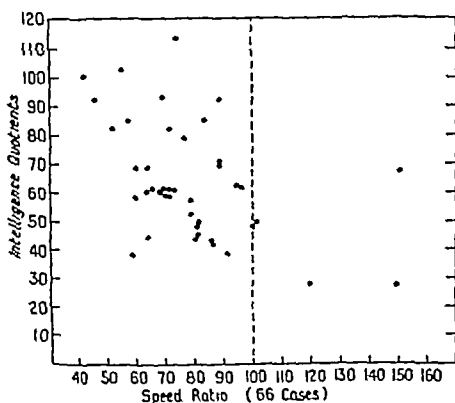


FIG. 2.—Relation of speed to intelligence in a group of cretins.

Speed ratio = $\frac{\text{mental age in speed tests}}{\text{mental age in intelligence tests}} \times 100$

The apparent lessening or even reversal of the disparity in some of the cases with low intelligence quotient is partly attributable to the preponderance, among intelligence tests at this level, of tests in which speed is an important factor, and to the figures employed in scoring and computing the ratio.

Vocabulary tests were also given to the subjects, and a similar procedure—i.e., comparison between mental age so estimated and mental age measured by the customary Binet tests—indicated that there was a slight superiority in respect of vocabulary over what is customarily found in non cretinous persons. This is in keeping with the observations of de Quervain. Few of those with an intelligence quotient below 80 could articulate clearly; they slurred their consonants and in many instances used *F* for *Th*, and other childish mispronunciations. This was more common in those with severe defect, who also had, for the most part, husky, gruff voices, and little to say.

The results of the intelligence tests on this sample, which is not necessarily representative, do not in themselves indicate more than that some people who have thyroid deficiency in childhood can become intellectually quite normal, and that in this disease every gradation can occur from normality to idiocy. For fuller use of the findings, it is necessary to compare them with the age of onset of the illness, its severity, the adequacy of treatment (as to dosage, continuity, and promptness of administration after the onset of symptoms), and the other, i.e., physical, evidences of the disorder now evident. On many of these points certainty is unobtainable. Still less can the innate endowment of the affected individuals be assessed, it is not unlikely, for example, that a few of these people might have been of poor intelligence even if they had not had any thyroid deficiency. This last problem can best be met by considering the general level of intelligence in their family, especially among their siblings. The other points as to the illness and its adequate treatment have been settled, as far as was possible, by considering the details of their illness obtainable from hospital records and their parents' recollection, and then grading the cases as to adequacy of treatment on a five point scale (see Table).

FAMILY HISTORY

1 *Familial intelligence*—In 14 families there were one or, rarely, more members (parents or siblings) who were described as dull or feeble minded, apart from cretinism. Of these, only six persons were certified defectives or imbeciles. In 4 families one parent was feeble minded or dull, and in two cases a collateral was recorded as defective. These data are of course, not complete, and are given mainly to indicate that the general level of intelligence may be assumed to have been average in the majority of the patients, had they not had thyroid deficiency.

2 *Thyroid disorder*—Of the "familial" incidence of thyroid disease it is not possible to say more than that apart from 4 families in which there were two or more cretins, in five cases a sibling also had "cretinoid" features, and in one case a sibling was hyperthyroid, in another a sister had a goitre, two had myxædema. In seven there were sub-thyroid features in the mother, in four they were present on the father's side. In one the mother had a goitre until the birth of the child, and in another the mother was hyperthyroid and her mother had had myxædema. Many of the families were of short stature so that there seems a possibility that a cretinoid constitution may predispose to the illness, the data do not warrant a conclusion.

3 *Familial cretinism*—One of the 3 families in which several cretin members were examined is of interest (see L H, F H, and A H, in Table†). In this family there were four cretins, the most severely affected having died when 43 years of age. Eleven other children had died in infancy of causes unknown, and three were normal. The mother, an active woman, was slight in build though not short, but her features were cretinoid (her nose was flat, the eyes far apart, and the skin somewhat flabby). None of the other maternal collaterals nor members of the father's family were cretinoid or short. In another family with a brother and sister mildly affected neither the parents nor any collaterals showed cretinoid features or short stature. The female patient had been born during the war, when the mother was very anxious, and there was a history of fits in the mother's family. In the third family (where two brothers were cretins) the mother had a goitre, which disappeared at the birth of the elder cretin. There were seven other healthy children surviving to adult age, all successful in their work, and of good physique. One is a police man. The father was also in the Metropolitan Police, and came of very healthy stock. One of the cretins' healthy siblings has, however, a strong facial resemblance to the elder cretin.

4 *Mental disorder*—In 11 families there was a history of mental disorder (the diagnosis of which cannot now be determined), in 3, one or more siblings had fits, in 2, the siblings were deaf or deaf and dumb.

5 *External factors*—An external factor could seldom be discovered or held responsible for the disease. There had been a difficult or prolonged labour in 20 cases. One patient was syphilitic, another had had meningitis. It is noteworthy that 12 were reported as having had one or more fits, but only 2 of these were reported as having been born asphyxiated or after a difficult labour.

In an additional 18 cases investigated as to familial incidence of abnormality, there were 4 instances of fraternal imbecility, 2 of fraternal goitre, 1 of paternal cretinism. Late menarche in the mother was found occasionally here as in the larger group.

AGE OF ONSET

The age of onset can be determined satisfactorily only by medical records made at the time. Unfortunately, since most of these cases had been seen as out-patients, their records are no longer available, most hospitals destroying their out-patient notes after fifteen years. For those who were in patients, or whose parents have photographs and other data less deceptive than their memory, some estimate can be made. It seems that definite signs of thyroid deficiency had been noticed by the doctor or parent before the end of the first year in twenty patients, of whom the intelligence quotients were found to be still low, varying between 70 and idiocy which defied measurement. In ten more, signs had been noticed before the end of their second year. The latest recorded ages of onset among the remainder were 8, 9, and 12, the corresponding intelligence quotients being respectively 69, 80, and 102. It looks as though, other things being equal, the earlier the onset the worse the outlook, but the data are, as already pointed out, unsatisfactory, and closer inspection of the details of the early history as recalled by the parents suggests that signs of thyroid deficiency could probably have been noted very much earlier than they had been in the majority.

† The Table appears in the concluding part of the paper to be published next week.

of the cases. This is also indicated by a large number of instances in which walking and talking were acquired later than the third year (in just two thirds of the cases). Clean habits were remembered as having been attained before the end of the third year

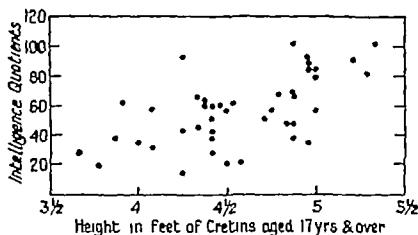


FIG. 3.—Relation of intelligence to standing height in a group of cretins.

in only a third of the cases. In 31 others there was delay in the rest it was not recorded.

INTERVAL BEFORE TREATMENT

In ascertaining the interval before treatment began there are much the same difficulties as in regard to the preceding question. In 26 cases treatment had been instituted promptly—i.e. less than a year after symptoms were first noticed. At the cost of anticipating some other points as to adequacy of treatment, it is worth recording here that in one case where treatment had commenced when the patient was only four months old and had been continued with scarcely any interruption since the intelligence quotient is now only 34 and that in another whose symptoms appeared at the age of eighteen months and were immediately treated, the intelligence quotient is only 27 though thyroid administration had gone on steadily ever since moreover as a paradoxical instance of the opposite kind a man who showed some symptoms soon after birth had no treatment until he was thirty-one, and yet has an intelligence quotient of 63. There are cases in the series where symptoms had been noticed before the age of three no treatment had been instituted for ten years or more but the intelligence quotient is within normal range the most striking instance being a girl with an intelligence quotient of 101 and typical cretin appearance whose symptoms began during the first six months of life yet she had no treatment until she was eleven and then it was stopped for good after a year. It would be a manifest error to conclude from these cases that treatment is as effective when tardy as when prompt it is however legitimate to suppose that in some cases conspicuous physical evidence of cretinism may not be associated with gross mental deficiency irrespective of whether treatment has been given at all or been started late. The relationship of physical to mental retardation of development is discussed below as is also the adequacy of treatment.

RELATIONSHIP OF MENTAL TO PHYSICAL DEVELOPMENT

Fig. 3 shows the relation of height to intelligence quotient. The individual figures are given in the Table.

There was no reason to suppose that the physical and the mental development would in these cases have run parallel or that standing height is the best criterion

of defects of physical development. If it be assumed that thyroid deficiency leads to an arrest of development, the comparable data would be those of children. The correlation here is sometimes made between intelligence quotient and actual height sometimes between intelligence quotient and the comparable relative measure—i.e. the deviation from the average height for each age-sex group. There is a slight positive correlation varying between 0.14 ± 0.03 (Murdoch and Sullivan) 0.45 ± 0.026 for boys, 0.3 ± 0.028 for girls (Dawson) and 0.22 ± 0.036 for gifted boys 0.21 ± 0.38 for gifted girls (Terman). There is in short a definite but slight correlation between height and intelligence in children.

It is however unsafe to assume that the effect of thyroid deficiency is to arrest development as a whole it may only retard development and its effect may be selective on different organs and functions. On these matters there is a large body of evidence.

(To be concluded)

MENSTRUAL FISTULÆ *

WITH A NOTE ON THE SIGNIFICANCE OF TRANSUTERINE MENSTRUATION

By R. GLYN MALIPHANT, M.D. M.R.C.P. Lond.
F.R.C.S. Eng. M.C.O.G.

GYNECOLOGIST, CARDIFF ROYAL INFIRMARY LECTURER
IN OBSTETRICS AND GYNECOLOGY, WELSH NATIONAL
SCHOOL OF MEDICINE

In 1928 Max Ballin suggested the term 'menstrual fistula' for a sinus in a laparotomy scar characterised by the periodic discharge of blood more or less coincident with menstruation. It may be assumed that such a sinus communicates either with the uterine mucosa or with aberrant endometrial tissue but it is only to the former that the term 'fistula' is strictly applicable. Endometriomata have a symptomatology and pathology of their own and in this paper I propose to confine the title 'menstrual fistula' to cases in which connexion with the uterine cavity is established.

Fistulous tracts leading from the uterus to the abdominal wall are almost always sequelæ of an operation and their symptoms are pathognomonic. After operation the wound fails to heal completely and a small sinus remains which discharges dark blood at the time of the menses. In some cases the skin unites and the menstrual discharge collects as a subcutaneous hæmatoma to rupture externally later.

CASE REPORT

Mrs. A., aged 30 with one child of 5 years was admitted to the Cardiff Royal Infirmary in March 1930 with a discharging wound in the left groin. The wound ordinarily drained pus but at the menstrual periods blood issued from it freely. Menstruation was regular unaccompanied by pain and of ten days duration. During the last few years there had been a slightly increased menstrual loss but no intermenstrual bleeding had occurred either from the wound or vaginally. The woman had previously been admitted to the surgical side of the hospital on two occasions and the surgical note-books furnished the following history—

In March 1931 she was admitted as an emergency with pain in the right iliac fossa. Appendicitis was

Read before the Midland Obstetrical and Gynaecological Society May 25th 1937

The apparent lessening or even reversal of the disparity in some of the cases with low intelligence quotient is partly attributable to the preponderance, among intelligence tests at this level, of tests in which speed is an important factor, and to the figures employed in scoring and computing the ratio.

Vocabulary tests were also given to the subjects, and a similar procedure—i.e., comparison between mental age so estimated and mental age measured by the customary Binet tests—indicated that there was a slight superiority in respect of vocabulary over what is customarily found in non cretinous persons. This is in keeping with the observations of de Quervain. Few of those with an intelligence quotient below 80 could articulate clearly: they slurred their consonants and in many instances used *F* for *Th*, and other childish mispronunciations. This was more common in those with severe defect, who also had, for the most part, husky, gruff voices, and little to say.

The results of the intelligence tests on this sample, which is not necessarily representative, do not in themselves indicate more than that some people who have thyroid deficiency in childhood can become intellectually quite normal, and that in this disease every gradation can occur from normality to idiocy. For fuller use of the findings, it is necessary to compare them with the age of onset of the illness, its severity, the adequacy of treatment (as to dosage, continuity, and promptness of administration after the onset of symptoms), and the other, i.e., physical, evidences of the disorder now evident. On many of these points certitude is unobtainable. Still less can the innate endowment of the affected individuals be assessed, it is not unlikely, for example, that a few of these people might have been of poor intelligence even if they had not had any thyroid deficiency. This last problem can best be met by considering the general level of intelligence in their family, especially among their siblings. The other points as to the illness and its adequate treatment have been settled, as far as was possible, by considering the details of their illness obtainable from hospital records and their parents' recollection, and then grading the cases as to adequacy of treatment on a five point scale (see Table).

FAMILY HISTORY

1 *Familial intelligence*—In 14 families there were one or, rarely, more members (parents or siblings) who were described as dull or feeble minded, apart from cretinism. Of these, only six persons were certified defectives or imbeciles. In 4 families one parent was feeble minded or dull, and in two cases a collateral was recorded as defective. These data are of course, not complete, and are given mainly to indicate that the general level of intelligence may be assumed to have been average in the majority of the patients, had they not had thyroid deficiency.

2 *Thyroid disorder*—Of the "familial" incidence of thyroid disease it is not possible to say more than that apart from 4 families in which there were two or more cretins, in five cases a sibling also had "cretinoid" features, and in one case a sibling was hyperthyroid, in another a sister had a goitre, two had myxœdema. In seven there were sub-thyroid features in the mother, in four they were present on the father's side. In one the mother had a goitre until the birth of the child, and in another the mother was hyperthyroid and her mother had had myxœdema. Many of the families were of short stature so that there seems a possibility that a cretinoid constitution may predispose to the illness, the data do not warrant a conclusion.

3 *Familial cretinism*—One of the 3 families in which several cretin members were examined is of interest (see L H, F H, and A H, in Table†). In this family there were four cretins, the most severely affected having died when 43 years of age. Eleven other children had died in infancy of causes unknown, and three were normal. The mother, an active woman, was slight in build though not short, but her features were cretinoid (her nose was flat, the eyes far apart, and the skin somewhat flabby). None of the other maternal collaterals nor members of the father's family were cretinoid or short. In another family with a brother and sister mildly affected neither the parents nor any collaterals showed cretinoid features or short stature. The female patient had been born during the war, when the mother was very anxious, and there was a history of fits in the mother's family. In the third family (where two brothers were cretins) the mother had a goitre, which disappeared at the birth of the elder cretin. There were seven other healthy children surviving to adult age, all successful in their work and of good physique. One is a police man. The father was also in the Metropolitan Police, and came of very healthy stock. One of the cretins' healthy siblings has, however, a strong facial resemblance to the elder cretin.

4 *Mental disorder*—In 11 families there was a history of mental disorder (the diagnosis of which cannot now be determined), in 3, one or more siblings had fits, in 2, the siblings were deaf or deaf and dumb.

5 *External factors*—An external factor could seldom be discovered or held responsible for the disease: there had been a difficult or prolonged labour in 20 cases, one patient was syphilitic, another had had meningitis. It is noteworthy that 12 were reported as having had one or more fits, but only 2 of these were reported as having been born asphyxiated or after a difficult labour.

In an additional 18 cases investigated as to familial incidence of abnormality, there were 4 instances of fraternal imbecility, 2 of fraternal goitre, 1 of paternal cretinism. Late menarche in the mother was found occasionally here as in the larger group.

AGE OF ONSET

The age of onset can be determined satisfactorily only by medical records made at the time. Unfortunately, since most of these cases had been seen as out-patients, their records are no longer available, most hospitals destroying their out-patient notes after fifteen years. For those who were in patients, or whose parents have photographs and other data less deceptive than their memory, some estimate can be made. It seems that definite signs of thyroid deficiency had been noticed by the doctor or parent before the end of the first year in twenty patients, of whom the intelligence quotients were found to be still low, varying between 70 and idiocy which defied measurement. In ten more, signs had been noticed before the end of their second year. The latest recorded ages of onset among the remainder were 8, 9, and 12, the corresponding intelligence quotients being respectively 69, 80, and 102. It looks as though, other things being equal, the earlier the onset the worse the outlook, but the data are, as already pointed out, unsatisfactory, and closer inspection of the details of the early history as recalled by the parents suggests that signs of thyroid deficiency could probably have been noted very much earlier than they had been in the majority.

† The Table appears in the concluding part of the paper to be published next week.

of the cases. This is also indicated by a large number of instances in which walking and talking were acquired later than the third year (in just two thirds of the cases). Clean habits were remembered as having been attained before the end of the third year

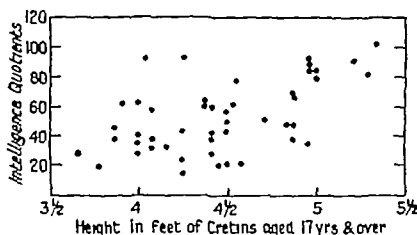


FIG. 3.—Relation of Intelligence to standing height in a group of cretins.

in only a third of the cases in 31 others there was delay in the rest it was not recorded.

INTERVAL BEFORE TREATMENT

In ascertaining the interval before treatment began there are much the same difficulties as in regard to the preceding question. In 20 cases treatment had been instituted promptly—i.e. less than a year after symptoms were first noticed. At the cost of anticipating some other points as to adequacy of treatment it is worth recording here that in one case where treatment had commenced when the patient was only four months old and had been continued with scarcely any interruption since the intelligence quotient is now only 34 and that in another whose symptoms appeared at the age of eighteen months and were immediately treated the intelligence quotient is only 27 though thyroid administration had gone on steadily ever since moreover as a paradoxical instance of the opposite kind, a man who showed some symptoms soon after birth had no treatment until he was thirty-one and yet has an intelligence quotient of 63. There are cases in the series where symptoms had been noticed before the age of three no treatment had been instituted for ten years or more but the intelligence quotient is within normal range the most striking instance being a girl with an intelligence quotient of 101 and typical cretin appearance whose symptoms began during the first six months of life yet who had no treatment until she was eleven and then it was stopped for good after a year. It would be a manifest error to conclude from these cases that treatment is as effective when tardy as when prompt: it is however legitimate to suppose that in some cases conspicuous physical evidence of cretinism may not be associated with gross mental deficiency irrespective of whether treatment has been given at all or been started late. The relationship of physical to mental retardation of development is discussed below as is also the adequacy of treatment.

RELATIONSHIP OF MENTAL TO PHYSICAL DEVELOPMENT

Fig. 3 shows the relation of height to intelligence quotient. The individual figures are given in the Table.

There was no reason to suppose that the physical and the mental development would in these cases have run parallel or that standing height is the best criterion

of defects of physical development. If it be assumed that thyroid deficiency leads to an arrest of development the comparable data would be those of children. The correlation here is sometimes made between intelligence quotient and actual height sometimes between intelligence quotient and the comparable relative measure—i.e. the deviation from the average height for each age-sex group. There is a slight positive correlation varying between 0.14 ± 0.03 (Murlock and Sullivan) 0.46 ± 0.028 for boys 0.3 ± 0.028 for girls (Dawson) and 0.22 ± 0.036 for gifted boys, 0.21 ± 0.38 for gifted girls (Terman). There is in short, a definite but slight correlation between height and intelligence in children.

It is however unsafe to assume that the effect of thyroid deficiency is to arrest development as a whole; it may only retard development and its effect may be selective on different organs and functions. On these matters there is a large body of evidence.

(To be concluded)

MENSTRUAL FISTULÆ*

WITH A NOTE ON THE SIGNIFICANCE OF TRANSUTERINE MENSTRUATION

By R GLYN MALIPHANT M.D. M.R.C.P. Lond.
F.R.C.S. Eng. M.C.O.

GYNECOLOGIST, CARDIFF ROYAL INFIRMARY; LECTURER
IN OBSTETRICS AND GYNECOLOGY, WELSH NATIONAL
SCHOOL OF MEDICINE

In 1928 Max Ballin suggested the term 'menstrual fistula' for a sinus in a laparotomy scar characterised by the periodic discharge of blood more or less coincident with menstruation. It may be assumed that such a sinus communicates either with the uterine mucosa or with aberrant endometrial tissue but it is only to the former that the term 'fistula' is strictly applicable. Endometriomata have a symptomatology and pathology of their own and in this paper I propose to confine the title 'menstrual fistula' to cases in which connexion with the uterine cavity is established.

Fistulous tracts leading from the uterus to the abdominal wall are almost always sequelæ of an operation and their symptoms are pathognomonic. After operation the wound fails to heal completely and a small sinus remains which discharges dark blood at the time of the menses. In some cases the skin unites and the menstrual discharge collects as a subcutaneous hematoma to rupture externally later.

CASE REPORT

Mrs. A., aged 39 with one child of 5 years was admitted to the Cardiff Royal Infirmary in March 1936 with a discharging wound in the left groin. The wound ordinarily drained pus but at the menstrual periods blood issued from it freely. Menstruation was regular unaccompanied by pain and of ten days duration. During the last few years there had been a slightly increased menstrual loss but no intermenstrual bleeding had occurred either from the wound or vaginally. The woman had previously been admitted to the surgical side of the hospital on two occasions and the surgical note-books furnished the following history:—

In March 1931 she was admitted as an emergency with pain in the right iliac fossa. Appendicitis was

Read before the Midland Obstetrical and Gynaecological Society May 28th 1937

suspected and the abdomen was opened through a right paramedian incision. The vermiform appendix was only superficially congested, but the right appendages were acutely inflamed, and thin yellow pus was found in the pelvis. Right salpingectomy and appendicectomy were performed. No comment was made on the state of the adnexæ on the left side.

She remained well until October, 1932, when she was readmitted with a tense painful fluctuating swelling in the left groin, immediately above the inner two thirds of Poupart's ligament. An incision 3 in. long was made over the swelling in the line of the inguinal canal. The tissues were dissected down to the external oblique muscle which was divided along its fibres. This opened an abscess full of foul-smelling pus, which communicated with an intraperitoneal abscess by an opening too small to admit one finger. Two drainage tubes were inserted into the abscess cavity and the wound was closed in layers. The pus was sterile on culture and the drainage tubes were removed next day. The inguinal wound did not heal and a sinus remained which had since regularly discharged blood coincidentally with menstruation. The blood appeared almost simultaneously with the onset of the menstrual flow, and disappeared a few hours after the menses ceased.

When she was transferred to the gynaecological department in March, 1936, her general condition was fairly good. There were two scars in the anterior abdominal wall, a well healed paramedian scar, and one in the left groin running a short distance above and parallel with Poupart's ligament. In the centre of the latter there was a small opening from which dark blood was exuding. The uterus was normal in size, but somewhat fixed, and no gross lesion could be detected in the appendages. The tissues about the sinus were indurated but no definite tumour was palpable. The sinus admitted a probe for a distance of an inch, and on injecting methyl violet into it the fluid escaped from the cervix.

In view of the chronicity of the condition and the annoyance caused by the constant discharge, it was decided to operate. After closing the mouth of the fistula, an elliptical incision was made around it and the scar of the previous operation was excised. On opening the peritoneal cavity, the pelvic organs were found buried in adhesions. The free end of the left fallopian tube was fixed to the posterior aspect of the inguinal wound and the canal in the parietes was continuous with the tubal lumen. The uterus and ovaries were macroscopically normal. The left fallopian tube and the canal in the abdominal wall were removed in one piece, and the abdomen was closed. The post operative course was uneventful. Menstruation occurred a few weeks after the operation and the wound remained dry. When last seen the patient was in good health, and the wound in the groin was soundly healed.

The tract in the abdominal wall and the attached fallopian tube measured 5 in. The tubal wall was thickened and on microscopic examination showed tuberculous endosalpingitis with numerous giant-cell systems. The canal in the parietes was lined throughout with granulation tissue, and the examination of many sections failed to show any tuberculous disease or glandular tissue in its wall.

DISCUSSION ON ÆTIOLOGY

Clinical reports of uteroparietal fistulæ are not common, particularly in this country, but there are 70 cases referred to in the literature. These fall in two groups which are anatomically and ætiologically distinct.

In the first group the communication between the uterine cavity and abdominal wall is direct. Fistulæ of this type may follow ventrofixation

(Bircher 1910) or myomectomy (Ballin 1928), but in most of the cases reported they have been incidental to a previous Cæsarean section. In 1922 Loieq found accounts of 28 cases of uterine fistulæ following Cæsarean section, and added one of his own. Similar ones have since been recorded by Puccioni (1925), Price (1928), Brayne (1930), and Devraigne, Banzet, and Mayer (1930), bringing the total to 37. Faulty operative technique, infection, and subsequent adhesion of the uterine and parietal wounds are the principal causes of fistula formation after Cæsarean section, but the use of non absorbable suture material in the uterus is probably a contributory factor. Uteroparietal union is of major importance, and it may be for this reason that fistula of the uterus is a sequel which seems to be peculiar to the upper-segment operation.

In the second group the connexion between the uterus and abdominal wall is indirect via one of the fallopian tubes or tubal stumps. Indirect uteroparietal fistulæ are rare at the present time, but half a century ago they were common complications of gynaecological operations. In the early days of ovariectomy, when it was customary to fix the ovarian pedicle in the abdominal wound, the tubal stump often became the site of a menstrual fistula, but these fistulæ, unlike the type seen nowadays, usually closed without delay. Spencer Wells (1882) refers to this sequel of ovariectomy in the following words:

"Then after the wound is closed, it is said to lead to a re-opening each month, and an escape of some menstrual fluid. And this is true in some—perhaps in nearly a third of the cases. But if the patient be prepared for it, it is not of the slightest consequence. The fallopian tube almost always contracts completely after a few months and there is no further escape. I can recollect only two cases where it has continued up to the date of the last report from the patient, and then it caused but slight inconvenience. If menstrual fluid can escape through the partially closed fallopian tube fixed in the cicatrized wound, so it may escape if the tube be left within the peritoneal cavity, and the result may be a fatal hæmatocele."

Fixation of the fallopian tube or tubal stump to the parietes is probably essential to the development of a tubo abdominal fistula, and under modern surgical conditions such fixation is almost always the result of infection. Thus pelvic sepsis imitates closely the effect of the deliberate extraperitoneal fixation of the tubal stump of the last century.

There are three instances on record of indirect uterine fistulæ of spontaneous origin. One followed the rupture of a pelvic abscess in the region of the umbilicus (Deverre 1920), another appeared in the scar of a laparotomy performed 16 years previously (Tortora and Sanvitale 1930), and in the third case, an advanced extra uterine gestation became attached to and fistulous in the anterior abdominal wall. After discharging fetal parts, the fistula continued to discharge blood at intervals, in addition to a small amount of fecal matter (Bouzel 1884).

Occasionally the condition has followed salpingo oophorectomy performed by the usual ligature method in a potentially clean field (Ballin 1928, Draps 1929), but some element of infection seems to have been operative in each instance. In Draps's case there was an additional mechanical factor—namely, complete stenosis of the cervix following amputation—and the fistula was the sole outlet for the menstrual discharge.

These cases are however exceptional, and the great majority of tubo-abdominal fistulæ follow operations performed for gross pelvic infection—such as the

removal of infected appendages or the drainage of an appendiceal or tubo-ovarian abscess (Masson and Simon 1928 Buscho and Curthe 1920 Brady 1930). In salpingectomy the use of non absorbable suture material in the presence of infection and the slipping of the ligature on the tubal stump are probably important causal factors. Non-absorbable suture material was removed at the second operation in three cases of tubo abdominal fistula seen at the Mayo Clinic (Masson and Simon 1928).

The formation of an indirect menstrual fistula depends upon three conditions—adhesion of the fallopian tube or tubal stump to the abdominal wall, patency of the tubal lumen and reflux of menstrual blood from the uterus. It is generally recognised that transtubal menstruation may occur under certain circumstances. It has already been noted that Spencer Wells observed an escape of menstrual blood from the tubal stump in nearly a third of his cases of ovariectomy. Pelvic infection often leads to adhesion of the adnexa to the parietes but in such circumstances the third factor—patency of the tubal lumen—is unusual, and it is the incompatibility of these two conditions that probably accounts for the rarity of tubo-abdominal fistula. In pyococcal infection the fimbrial extremity of the fallopian tube tends to close early. In tuberculous salpingitis on the contrary the tubal lumen is more often preserved (Frank 1931) and a striking feature of this review of indirect menstrual fistula is the relatively high incidence of associated pelvic tuberculosis. In the series of 16 menstrual fistula collected by Masson and Simon (1928) from the records of the Mayo Clinic 5 were associated with adnexal tuberculosis. Iribarne (1927) Ballin (1928) Mesa (1929) and Jeanneney and Laporte (1932) have also described cases of tuberculous salpingitis with menstrual abdominal fistula, and another instance of this association is published in this paper.

There are now records of approximately 30 cases of indirect menstrual fistula and 10 of these have occurred in conjunction with peritoneal or adnexal tuberculosis.

DIAGNOSIS

Granulation tissue may bleed about the time of the menses but the blood is usually bright red and the relationship of the hemorrhage to menstruation is not constant. The diagnosis of menstrual bleeding rests on the regular occurrence of dark hemorrhage limited to the catamenia and the only condition which can in this respect simulate a menstrual fistula is a sinus in connexion with an area of ectopic endometrial tissue. Extragenital endometriomata are not uncommon, and there are numerous records of endometrial tumours developing in laparotomy scars. Endometrial grafts however rarely grow in wounds which suppurate and fail to heal by first intention so endometriomata which discharge on to the skin surface are rare. One of the first examples was recorded by Fletcher Shaw in 1925 of an Adeno-myoma of the round ligament which menstruated through an inguinal incision and in this case the tumour was incised under a mistaken diagnosis. Menstrual sinuses in association with endometriomata have since been described by Ballin (1928) Schaaffner (1929), and Martin Michon and Pigeaud (1933).

Clinically these cases closely resemble uterine fistula and as Martin suggests have probably been the cause of some confusion in the past. The endometrioma is sometimes palpable beneath the sinus and it may undergo the painful premenstrual swelling typical of such tumours. A uterine fistula, on the

contrary is usually painless and as a rule the amount of discharge from it is much greater. In these respects a menstrual fistula may differ from a menstrual sinus but the former diagnosis is only established when communication with the uterine cavity is demonstrated either radiographically by the injection of coloured fluids or at operation.

Ballin (1928) reported one case in which the two conditions were combined. When a uterine fistula contains an endometrial tumour in its wall the hemorrhagic discharge may be derived from the uterine cavity, from the wall of the fistula or from both. Such a combination of lesions is probably exceptional, but can only be ruled out after endometriosis of the abdominal wall has been excluded by microscopic examination of the entire fistulous tract. The few histological records available suggest that the canal in the abdominal wall is usually lined with ordinary granulation tissue but remains of glandular crypts have occasionally been described (Devraigne 1930 Jeanneney and Laporte 1932). In the case recorded by Jeanneney and Laporte the wall of a tubo-abdominal fistula which followed the removal of a tuberculous pyosalpinx, was lined with tuberculous granulation tissue.

PROGNOSIS AND TREATMENT

Spontaneous healing of a uterine fistula is rare and it is for the annoyance and persistence of the condition that operation is usually required. But a direct uterine fistula carries in addition the risks of uteroperitoneal fixation in relation to childbearing and in such a case it is advisable to operate not merely for the inconvenience of the discharge but to avoid the obstetrical consequences.

In an uncomplicated case the operative risk is small but interference should be postponed so long as the fistula is acutely inflamed. An indirect fistula may be excised with the corresponding fallopian tube. If the fistula leads directly to the uterus the tract with the old scar may be completely excised, and the wound in the uterus carefully closed but many of these cases require hysterectomy. Tortora and Sanvitale (1930) succeeded in causing a direct uterine fistula to heal by dilating the cervix widely, curetting the sinus and draining the uterus vaginally for several days.

If the fistula communicates with bowel as well as with the uterus prognosis for operation is grave. Menstrual focal fistula have been recorded by Bouzou (1884) Puccioni (1925) Ballin (1928) and Mesa (1929).

Although fertility is probably reduced by the coexisting infection pregnancy may occur and proceed normally. In the event of pregnancy this may be allowed to continue to term, and Caesarean section performed through the posterior uterine wall as recommended by Devraigne Banzet and Mayer (1930). If an attempt be made to excise the fistula in the course of the Caesarean operation the risks of peritonitis are considerable (Martin 1933).

RETROGRADE MENSTRUATION

Not the least interesting feature of a study of tubo abdominal fistula is its bearing on transtubal menstruation. Many authorities consider that this plays an important part in pelvic pathology. It is a link of outstanding importance in Sampson's hypothesis of ovarian endometriosis and it also provides a possible mode of dissemination for uterine cancer. In 1925 Sampson reported that blood may occasionally be seen dripping from the fimbrial ends of the fallopian tubes of women operated upon at the time of the menses and in Goodall's opinion (1934) this observation

has since been confirmed by so many surgeons that its occurrence can no longer be a matter of doubt. Nevertheless many gynaecologists of wide experience have never observed it. Novak (1926) operated upon 13 women during menstruation without seeing any blood entering the peritoneal cavity, and argues further that menstruation is normally unaccompanied by any sign or symptom of peritoneal irritation such as is found with a tubal abortion. Novak's experience corresponds to that of many surgeons, so the conclusion must be that although transtubal menstruation may occur, it does so very rarely, and even in those cases in which menstrual spill has been observed it is hard to exclude some pathological basis for the regurgitation.

Radiography has now shown that the mechanism which prevents the free passage of fluid from the uterine cavity into the fallopian tubes is the sphincteric action of the uterotubal junction. When air or fluid is injected into the uterus, the isthmus and intramural portions of the tubes contract, thereby preventing for a time any leakage through the tubal ostia, and thus spasm has occasionally led to the incorrect assumption of tubal obstruction. But the sphincter is not strong enough to offer lasting resistance to injection, and is usually overcome by a pressure of 90 or 100 mm of mercury. Heuser (1924) noted that when the uterine cornu is in contraction, the uterotubal sphincter is closed, and it is no doubt for this reason that in uterine hæmorrhage the blood does not more commonly enter the peritoneal cavity. Whether the closure of the ostia depends upon uterine or tubal action is still debated, but the copious reflux which may take place through a tubo abdominal fistula suggests that contraction of the uterus is not sufficient to prevent leakage, and that there is a true sphincteric apparatus in the fallopian tube.

It is evident that in tubo abdominal menstrual fistulae this sphincteric mechanism is defective. It has been noted that fistulae of this type have, in the past, commonly followed ovariectomy, but are nowadays almost without exception associated with pelvic inflammation. It may be presumed that both sets of circumstances in some way disturb tubal action—division of the infundibulopelvic ligament in ovariectomy destroys an important section of the tubal nerve supply, and its musculature is damaged in pelvic infection—so the retrograde menstruation may be regarded as a manifestation of abnormal permeability of the uterotubal junction.

It is well recognised that the permeability of the fallopian tubes varies considerably in different subjects. Goodall (1934) has described 4 cases in which vaginal douche fluid has gained access to the peritoneal cavity, and in these it was subsequently shown that a pressure of 40 mm of mercury was sufficient to force gas through the tubal ostia. He concludes that in such women the oviducts are unusually patulous, and points out that a developmental anomaly of this nature may be an occasional cause of menstrual spill. Predisposition to retrograde menstruation would also result from deficiency and lack of control of the uterotubal sphincter, and the associated pathology of indirect menstrual fistula suggests that this may be a sequel of tubal inflammation. The frequency with which chronic salpingitis is found as a complicating lesion of ovarian endometriosis lends some support to this view.

SUMMARY

A case of uteroparietal fistula is described, which followed the drainage of a tuberculous pelvic abscess, and other cases on record are reviewed.

Uteroparietal fistulae are of two types. In the first there is direct connexion with the uterine cavity, and the fistula is usually the sequel of Cæsarean section. The second type is seen in conjunction with pelvic inflammation, and communication with the uterine cavity is indirect via one of the fallopian tubes or tubal stumps. In approximately one-third of the recorded cases indirect uterine fistula has been associated with peritoneal or adnexal tuberculosis.

The free transtubal menstruation often conspicuous in cases of tubo abdominal fistula signifies a breakdown of the sphincteric mechanism at the uterotubal junction. Chronic inflammation, by disturbing normal tubal physiology, may play an important part in the causation of pelvic endometriosis.

REFERENCES

- Ballin, M. (1928) *Surg. Gynec. Obstet.* 46, 525, quoted by Novak (1921).
 Birchler (1910) *Zbl. Gynäk.* 34, 852.
 Bouzel (1884) *Lyon méd.* 47, 613, quoted by Ballin.
 Brady L. (1930) *Bull. Sch. Med. Univ. Maryland* 15, 73.
 Brayne, W. F. (1930) *Brit. med. J.* 1, 862.
 Busche, A., and Curthe, W. (1929) *Derm. Wochs.* 88, 266.
 Dorrer, M. J. (1920) *Rev. franc. Gynec.* 15, 449.
 Devraigne, L., Banzet, P., and Mayer, M. (1930) *Bull. Soc. Obstet. Gynec. Paris*, 19, 403.
 Drips Della G. (1929) *Med. Clin. N. Amer.* 12, 1577.
 Frank, R. T. (1931) *Gynaecological and Obstetrical Pathology*, New York.
 Goodall J. R. (1934) *J. Obstet. Gynec.* 41, 78.
 Heuser O. (1924) *Semana méd. B. Aires*, 31, 1490.
 Iribarne J. (1927) *Ibid.*, 1, 1550.
 Jeanneney, G., and Laporte F. (1932) *J. Méd. Bordeaux*, 109, 415.
 Loloq R. (1922) *Gynec. et Obstet.* 6, 322.
 Martin, J. E., Michon M., and Pigeaud, H. (1933) *Pr. méd.* 41, 565.
 Masson, J. O. and Simon, H. E. (1928) *Amer. J. Obstet. Gynec.* 16, 682.
 Mosa O. (1929) *Semana méd. B. Aires*, 1, 23.
 Molino, A. H., and Boero R. A. (1932) *Ibid.* 2, 1152.
 Novak, E. (1931) *Menstruation and its Disorders*, New York.
 — (1926) *Amer. J. Obstet. Gynec.* 12, 484.
 Price, J. W. (1928) *Kentucky med. J.* 26, 476.
 Puccioni L. (1925) *Riv. Ital. Gynec.* 3, 107.
 Sampson, J. A. (1925) *Amer. J. Obstet. Gynec.* 10, 649.
 Schaeffer, G. O. (1929) *Northw. Med.* 28, 398.
 Schlink, H. (1925) *Med. J. Aust.* 2, 67.
 Shaw W. Fletcher (1925) *J. Obstet. Gynec.* 32, 121.
 Tortora M., and Sanvitale, A. (1930) *Ass. Ostet. Gynec.* 39, 163.
 Wells, T. Spencer (1882) *Ovarian and Uterine Tumours: Their Diagnosis and Treatment*, London.

DUODENITIS AND ITS SURGICAL TREATMENT

By GERSHON GARRY, M.D. Tufts, U.S.A.

SURGEON TO THE SHAARE ZEDEK HOSPITAL, JERUSALEM

BEFORE discussing the surgical treatment of duodenitis a brief review of the clinical aspect of the disease should be of interest. Till comparatively recent times duodenal ulcer was the most clearly defined disease, but recently duodenal dysfunction and duodenitis are becoming more and more realised as important factors. There have now been a series of reports on the subject of duodenitis 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 and it is generally admitted that often its diagnosis is made only with considerable difficulty.

SYMPTOMS AND SIGNS

First in importance is the differential diagnosis from duodenal ulcers. Other pathological states, however, such as gall bladder disease, pancreatitis, appendicitis and colitis closely resemble and may often accompany the disease, so that careful clinical judgment is required to arrive at a correct conclusion.

While the symptomatology of duodenitis is not characteristic and may leave us in doubt about the

actual condition the X ray examination is of considerable help in establishing the diagnosis.^{18,21} Kirklin (1934) in his valuable contribution on the subject emphasises several findings which he considers pathognomonic of duodenitis:

"First in importance among the signs is an abnormally increased irritability of the duodenum. In typical instances the hyperirritability is manifested in an intense spasticity and a hypermotility of the duodenum. The barium races through so rapidly that there is a scant opportunity to inspect the shadow. The bulb is frequently small and grossly deformed, both on its mesial and lateral borders and the configuration of the deformity varies quickly from moment to moment. Further the bulbular shadow lacks the density commonly seen in cases of frank ulcers; it is thin and indistinct and its margins are hazy. A second characteristic is the mucosa pattern which is coarsely and irregularly reticular and is depicted as translucent islets lying in a denser network. This appearance is perhaps attributable to puckering of the mucosa by spastic contractions of its muscularis. A third characteristic of simple duodenitis is the absence of an ulcer crater. Neither marginal niche nor central fleck can be seen. Finally uncomplicated duodenitis is marked almost invariably by absence of gastric retention or other evidence of obstruction whereas such obstruction occurs in more than 25 per cent of cases of true ulcer. It is clear both from the roentgenologic and pathologic studies that duodenitis does not tend to produce organic stenosis. Completing the typical syndrome of duodenitis is a small hypertonic stomach with active sometimes disordered peristalsis. Like roentgenologic signs the foregoing marks of duodenitis vary in emphasis, and only a minority of cases are so typical that the diagnosis is obvious. Thus among the last thirty-two cases only eight were diagnosed as duodenitis; four were deemed negative and a diagnosis of duodenal ulcer was made in twenty.

In a series of our own comprising 20 cases of simple duodenitis verified by operation and in part by the microscopic examination of excised tissues the diagnosis was not made in any of the cases previous to operation either clinically or roentgenologically. In 13 the diagnosis was duodenal ulcer and in the remainder gall bladder disease, appendicitis and colitis. The examination of the gastric contents was not characteristic. The fasting contents showed an average total acidity of 30 units and free acid 14 after Ewald's test meal the figures were 50 and 30 respectively. The stool examinations for occult blood were positive in 60 per cent. The X ray

findings were positive for duodenal ulcer in 15 of the series. 3 were diagnosed as gall bladder disease and 2 as appendico-colitis. The operative findings



FIG. 1 (Case 1).—Section of duodenum showing muscularis with displaced pancreatic tissue composed of solid alveoli and dilated excretory ducts ($\times 50$).

helped in establishing the diagnosis and comprised changes in the duodenal wall such as congestion of the serous coat, thickening of the entire duodenal wall, and adhesions to the neighbouring organs in some of the cases. No signs of an ulcer were detected in any of our series. In 5 cases where gastroduodenal resection was performed we were able to examine the interior of the duodenum both grossly and microscopically. It presented signs of general inflammation without ulceration.

In discussing the surgical treatment it should be emphasized that duodenitis is essentially a medical condition and surgery is resorted to only in the most obstinate cases where medical means are of no avail. The surgical procedures at our disposal comprise gastro-enterostomy which affords a certain rest to the diseased area, duodeno-jejunosomy serving a like purpose, and gastroduodenal resection a more radical procedure affording a complete and permanent rest to the diseased duodenum.

The experiences with gastro-enterostomy have not been very favourable. In the majority of cases the operation failed to procure the desired results. We performed it in 13 of our series. The follow-up records showed good results in 3 cases, bad results in 6 and the rest of the cases could not be traced. Some authors claim satisfactory results with duodeno-jejunosomy and consider it the method of choice. In recent years however gastroduodenal resection was performed in certain cases of duodenitis. On Konjetzny's suggestion (1934) cases with threatening haematemesis associated with erosive gastritis were treated with gastroduodenal resection (also Finsterer 1923). We extended this indication to a broader field and used gastroduodenal resection in cases when duodenitis without haematemesis was clinically severe and resisted all internal therapy. While our limited material in no way justifies general conclusions it may nevertheless act as a stimulus for further studies. A brief review of our cases is given below.

REPORT OF FIVE CASES

CASE 1

A man, aged 24, was admitted to the hospital on June 12th 1933 with the following history: "Seven



FIG. 2 (Case 2).—Above: section of pylorus. Inflammatory infiltration by eosinophils and neutrophils, especially in the muscular layer ($\times 100$). Below: Cluster of inflammatory cells ($\times 500$).

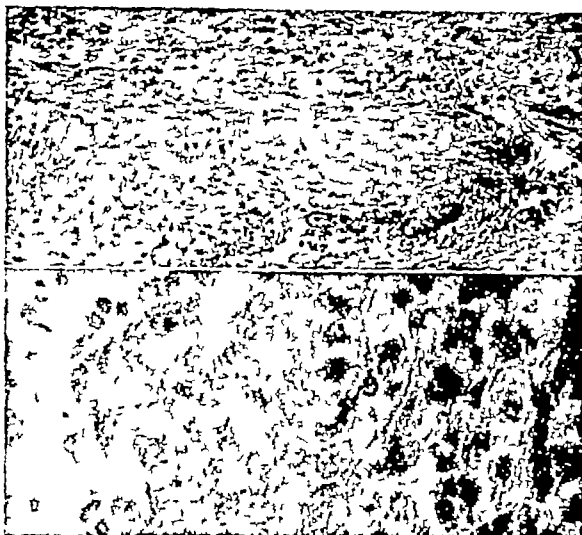


FIG 3 (Case 3)—(A) Above section of duodenum showing inflammatory infiltration of muscularis ($\times 120$) (B) Below infiltration of mucosa with plasma cells partly degenerated ($\times 600$)

years ago he began to complain of attacks of pain in the right hypochondrium, pains lasting several weeks and recurring every few months. At the onset the pains were in relation to the intake of food, but lately they were continuous, nausea but no vomiting. Bowels acted regularly. Radiograms on May 23rd, 1931, showed considerable hypersecretion and a tender and deformed duodenal bulb. The diagnosis of duodenal ulcer was made and subsequently a gastro-enterostomy was performed which relieved complaints only for a brief period. Physical examination on admission revealed tenderness in epigastrium and right hypochondrium. Gastric analysis following Ewald's test-meal showed total acidity 79 and free acid 30. The stool had no occult blood. Radiogram taken on June 15th, 1933, showed a patent anastomosis functioning well and a deformed duodenal bulb.

Operation on June 20th. The duodenum showed congestion of its serous coat and general thickening of its wall. No ulcer was detected. Gastroduodenal resection was performed and previous anastomosis left intact.

Pathological report—Duodeno-pylorus segment 5 cm. long. On opening lumen no ulcer was found and a small diverticulum is seen on the duodenal side which extends only into the mucosa. Microscopically the mucosa shows eosinophils sparingly distributed around the crypts and adjacent to the lymph follicles. The muscularis, below the above mentioned diverticulum, shows displaced pancreatic tissue composed of solid alveoli and a large number of dilated excretory ducts (Fig 1). Pericanalicular infiltrations of neutrophilic leucocytes, an occasional eosinophilic leucocyte, histiocytes, and some lymphocytes are seen near the dilated ducts. The solid gland tissue shows no inflammatory infiltration. Further away the muscularis shows few eosinophils and an occasional neutrophil, more so near the lymphatic layer. **Diagnosis** duodenum containing displaced pancreatic tissue with dilated excretory ducts, duodenitis.

Subsequent course—Convalescence uneventful, since operation he has been free from symptoms.

CASE 2

A man, aged 34, was admitted to the hospital on August 27th, 1933, with a history of epigastric pain of one year's duration. The attacks occurred an hour or two after meals and lasted for several hours. During the period of his illness he had a number of attacks which lasted two to three weeks at a stretch and left him in an exhausted state. Dieting gave no relief. Alkaline as well as other internal therapy was of no avail. Physical examination showed tenderness in the epigastrium and

right hypochondrium. Gastric analysis following Ewald's test-meal showed total acidity 79 and free acid 68. Stool was positive for occult blood. Urine negative. Leucocytes 5800. Radiogram showed considerable hypersecretion and hyperperistalsis, bulbous duodenum tender and with a "clover leaf" shadow. **Diagnosis** ulcer duodeni.

Operation on August 30th. The duodenum showed congestion of serous coat and general thickening of its wall. No ulcer detected. Gastroduodenal resection performed in accordance with Billroth 2.

Pathological report—Duodeno-pylorus segment 5.5 cm. long. On opening lumen mucosa found intact. Microscopically section of pylorus shows no changes in the mucosa except for the presence of a moderate number of plasma cells and an occasional eosinophil. The submucosa is oedematous and shows no inflammatory signs. The muscularis shows cell clusters composed of eosinophils and neutrophils infiltrating the tissue in all directions, chiefly near the smaller vessels. Smaller foci as well as single cells are seen also in other parts of the muscularis. The infiltration is more abundant towards the periphery in marked contrast to the inner muscular layer where it is scantier. Section of the duodenum presents a similar picture, in the mucosa the leucocytes are more abundant, the submucosa is oedematous but otherwise shows no inflammatory changes. The infiltration of the muscularis is less abundant and foci of lesser extent. **Diagnosis** gastritis and duodenitis (Fig 2).

Subsequent course—Convalescence uneventful, since operation he has been free from symptoms.

CASE 3

A man, aged 29, was admitted to the hospital on Sept 10th, 1932, with a history of attacks of epigastric pains of twelve years' duration. The attacks lasted several weeks and recurred every two to three months. The pains were relieved immediately following intake of food but returned two hours subsequently and with greater intensity, nausea but no vomiting. Bowels constipated. Physical examination showed considerable tenderness in the epigastrium. Gastric analysis following Ewald's test-meal gave a total acidity of 75 and free acid 32. Stool was positive for occult blood. Urine negative. Leucocytes 7100. Radiogram showed a deformed bulbous with elongation of lateral process. The stomach emptied itself completely four hours after the barium meal. **Diagnosis** duodenal ulcer.

Operation on Sept 15th. The duodenum showed congestion of its serosa and thickening of entire wall. No ulcer found. Gastroduodenal resection in accordance with Billroth 2.

Pathological report—Duodeno-pylorus segment 5 cm. long. On opening lumen mucosa found intact. Micro-

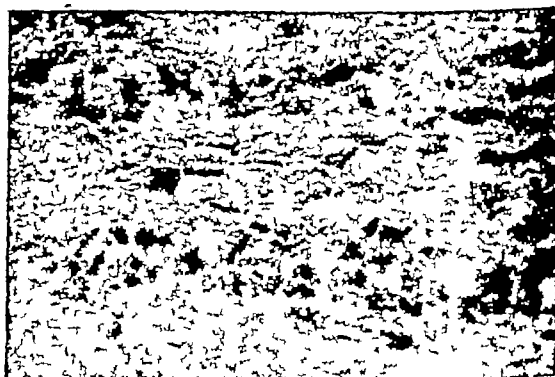


FIG 4 (Case 4)—Section of duodenum showing inflammatory infiltration (perivascular) of muscularis ($\times 500$)

scopically section of the duodenum shows mucosa with an abundance of lymph follicles and large germinal centres. The stroma of the mucosa is also rich in plasma cells and lymphocytes (Fig 3A). Many cells are encountered with broken up nuclei and chromatin, which is subdivided

into two or three circular segments peripherally placed; these are plasma cells with degenerated nuclei. The muscularis mucosae show an occasional eosinophil or neutrophil. The muscularis shows in its outer layers infiltrations of eosinophils and neutrophils distributed throughout its extent; part of the infiltrations are perivascular (Fig. 3a). Several leucocytes are also seen in the adjacent fatty tissue. Diagnosis: duodenitis.

Subsequent course.—Convalescence uneventful since operation free from symptoms.

CASE 4

A man, aged 42, was admitted to the hospital on Oct. 7th, 1934 with the following history. Three years previously he was operated upon for duodenal ulcer and a gastro-ostomy was performed. This relieved him for a year. Subsequently previous symptoms returned and with greater intensity characterised by epigastric attacks coming immediately after meals and lasting for hours. At the onset of the illness the attacks recurred every two to three weeks but recently they come on daily; nausea but no vomiting. Bowels act once in three days. Abdominal distension often accompanies the constipation. Physical examination showed tenderness in the epigastric region. The stools were negative for occult blood. Urine negative. Leucocytes 9800. Radiogram showed a patent anastomosis functioning well. Duodenum tender and does not fill well. The stomach emptied completely 20 mins. after administration of barium meal.

Operation on Oct. 16th. Anastomosis found faultless. Duodenum showed thickening of entire wall. No ulcer detected. Gastroduodenal resection performed and anastomosis left intact.

Pathological report.—Gastroduodenal segment 3.5 cm. long. On opening lumen mucosa found intact. Microscopically section of the duodenum shows mucosa rich in lymph follicles. In the stroma around the crypts many plasma cells and occasionally an eosinophilic leucocyte are encountered. The muscularis shows small perivascular infiltrations composed of neutrophils and eosinophils. Leucocytes mostly eosinophils are also seen intravascularly. Section of pylorus shows plasma cells in the mucosa. The submucosa is oedematous and contains large dilated veins. The muscularis mucosae is oedematous and many lymphocytes are found. Diagnosis: gastroduodenitis (Fig. 4).

Subsequent course.—Convalescence uneventful; since operation free from symptoms.

CASE 5

A youth aged 17 was admitted to the hospital on August 6th 1931 with a history of epigastric attacks of three years duration. At the outset the attacks occurred daily and lasted half an hour. Recently the pains became continuous. There was no relationship between the pains and the intake of food. Had nausea but never vomited. Bowels were constipated. Physical examination showed tenderness in the epigastrium and right hypochondrium. Gastric analysis following Ewald's test meal showed a total acidity of 75 and free acid 32. The stool was positive for occult blood. Urine negative. Leucocytes 9000. Radiogram showed much hypersecretion and hyperperistalsis and thickened folds of gastric mucosa. The duodenal bulb emptied rapidly and was very deformed. Three hours following barium meal the stomach was two-thirds full of residue. Diagnosis: duodenal ulcer.

Operation on August 12th. The duodenum showed congestion of serosa and thickening of entire wall. No ulcer detected. Fibrous adhesions found between the duodenum and gall-bladder; the latter showed no pathological changes. Gastroduodenal resection (Billroth 2).

Pathological report.—Gastroduodenal segment 4 cm. long. On opening lumen mucosa found intact. Microscopically section of duodenum shows many plasma cells in the mucosa. The submucosa is oedematous but shows otherwise no inflammatory changes. The muscularis shows small infiltrations of neutrophils and eosinophils especially near small vessels. Diagnosis: duodenitis.

Subsequent course.—Convalescence uneventful; since operation free from symptoms.

DISCUSSION

In reviewing the microscopic findings in our cases of duodenitis we are impressed by the close resemblance between this clinical entity and that of appendicitis. In both conditions the mucosa is only lightly affected while the intensity of the process is confined largely to the muscular coats. In appendicitis the portal of entrance is through a minute break in the mucosa (the Primär-afekt of Aschoff). Except for Case 3 of our series where there was considerable infiltration of the mucosa with plasma cells partly degenerated, the mucosa had minimal pathological changes. Yet it is plausible to assume that in duodenitis the entrance of the infection is also through the mucosa and the inflammation extends from within outwards. The intensity of the inflammation varies from a moderate degree as shown by Cases 1, 4 and 5 to the very intense almost phlegmonous inflammation of the duodenal muscularis as shown by Cases 2 and 3. It is readily conceivable why the clinical manifestations of duodenitis are most intense as the inflammatory infiltration of the duodenum interferes with the physiological peristalsis of the duodenum. In Case 1 we are likewise to assume that the pericardial inflammation and not the displaced pancreatic tissue accounted for the clinical manifestations as one at times encounters displaced pancreatic tissue in other parts of the intestines without giving rise to symptoms.

Clinically these cases emphasise the problem of the diagnosis and treatment of duodenitis. As a rule there is great disproportion between the symptoms and the anatomical changes. The severest clinical manifestations often stand out in contrast to the insignificant operative findings. Under the circumstances the surgeon finds himself in a predicament about the correct diagnosis and proper procedure to be followed. As is often the case a mere exploratory operation is performed without benefiting the patient. It is therefore incumbent upon us to establish as far as possible the diagnosis before resorting to surgery. This should be based upon a painstaking X ray examination of the gastro-intestinal tract and by eliminating affections of the adjacent organs. Once the diagnosis of duodenitis is established the only recourse left for obstinate cases refusing all internal therapy is operation. Considering the unfavourable results with previous surgical procedures it appears that gastro-duodenal resection should be the method of choice.

I wish to thank Prof. S. Getzowa of the Pathological Institute Hadassah Jerusalem for the microscopical slides for the pathological reports and for her helpful advice and Dr. A. Druckman for the radiographic examinations.

BIBLIOGRAPHY

1. de Abreu M. (1933) *Fortschr. Klin. Med.* 48 517
2. Andersen T. (1931) *Med. Lager* 136 147
3. Aschoff, J. W. and Grossman S. (1933) *Surg. Gynec.* 66 253
4. Balfour D. C. (1927) *J. Amer. med. Ass.* 89 1656
5. Bolton, G. and Belmont W. A. (1927) *Lancet* 1 131
6. Crutney, H. C. and Walsh E. L. (1927) *Surg. Gynec.* 66 253
7. Cunha I. (1931) *Amer. J. Surg.* 25 70
8. Finsterlin H. (1933) *Monat. f. Klin. Med.* 39 312
9. Friedmanwald J. and Feldman, M. (1931) *J. Amer. med. Ass.* 93 103
10. Haeuser G. (1927) *Med. Klin.* 23 120
11. Iwanoff L. M. (1929) *Klin. Med.* 12 1
12. Jansz Chankov, A. L. (1933) *Med. p.* 503
13. Judd, F. H. (1921) *J. Lancet* p. 1 (quoted by Kirklin 1929 1934b)
14. — (1927) *Ibid.* 341 (quoted by Kirklin 1929 1934b)
15. — (1927) *Amer. Surg.* 83 3
16. — and Naezel J. W. (1931) 10th Ann. Rept. of South. Surg.

(Continued at foot of next page)

GLUTEAL ANEURYSM

BY H I DEITCH, MS Lond, FRCS Eng

LATE RESIDENT SURGICAL OFFICER AT THE ROYAL INFIRMARY, BRADFORD AND

JOHN MCGHIE ROGAN, MB Edin

LATE HOUSE PHYSICIAN AT THE INFIRMARY

Gluteal aneurysm is rare, but its importance is more than academic since its prompt recognition may save a patient's life, either by securing correct treatment or by preventing a disastrous incision. Russell Howard has said that all swellings of the buttock should be regarded as gluteal aneurysms until a satisfactory contrary diagnosis has been made, and the following case report shows the wisdom of his statement.

CASE REPORT

A man aged 49, by occupation a motor mate, had been treated for 15 years for various gastric disorders and had undergone several operations 10 years previously, since when he had suffered intermittently from melena. On his admission to hospital in July, 1935, a diagnosis was made of 'achlorhydric microcytic anemia following gastro-enterostomy'. In February, 1936, he was readmitted under the care of Dr W Messer. He said he had enjoyed good health until two months previously when he began to have severe and rapidly progressive pain in the left buttock, which forced him to take to bed within a few days. Three weeks before admission he noticed a swelling in that buttock and it appeared to be increasing. On admission he was pale and emaciated. His blood count showed a hæmoglobin of 61 per cent, with a colour index of 0.63, and the typical picture of a secondary anemia. The spleen was enlarged. The greater part of the left buttock was involved in a swelling which was fluctuant and the left thigh was wasted. Clinically, his condition was graver than his blood picture suggests. Melena was absent, and no abnormality could be discovered on radiography of the alimentary tract. Some new bone formation was, however, apparent in the region of the left ilium. Dr H Franklyn reported upon it thus: "Myositis ossificans or new bone formation due to inflammatory process".

Aspiration was attempted, but failed. As the most likely diagnosis appeared to be neoplasm, the then house physician performed a biopsy, noting at the time that the specimen appeared to be blood-clot. Dr C J Young issued a pathological report to the effect that the specimen consisted of degenerated muscle fibres replaced by fibrous tissue, with no evidence of neoplasm. Soon after J M R became house physician the biopsy wound began to ooze, and the patient's condition deteriorated, and when seen by H I D he was looking desperately ill. The diagnosis of gluteal aneurysm was tentatively made, but operative treatment was considered out of the question because the patient was so ill, and the wound was therefore packed.

Three days later there was a severe secondary hæmorrhage which could not be stopped by pressure and it

became essential to explore the wound. This was done under local anesthesia while an intravenous gum-saline infusion was given pending the arrival of a blood donor. On enlarging the wound it became apparent that the gluteal swelling was a mass of tightly packed laminated blood clot and round the mass blood oozed rapidly up into the wound. A laparotomy was impossible (the pulse was almost imperceptible) so an attempt was made to pack the vessel against the great sciatic notch by turning down a flap of all the tissues at the back of the ilium, but the patient died while this was being done.

At autopsy an aneurysm of the left superior gluteal artery which had ruptured, just outside the pelvis was demonstrated, from the condition of the clot and the remnants of the vessel it seemed probable that the rupture had occurred some weeks previously. The clot had separated the muscles from the dorsum of the ilium and measured about two pints.

COMMENT

The cause of gluteal aneurysm varies. The majority are traumatic in origin, but a few are spontaneous. The case described above must be included among the latter since no history of trauma could be elicited. Of about 80 cases recorded (Matas, Rupp) 49 were traumatic and 23 spontaneous, the cause of the remainder being undetermined. Of those due to trauma half followed stab wounds and half falls on, or blows on, the buttocks. Rupp states that the condition is commoner on the left side, but may be bilateral.

Signs and symptoms.—Pain in the buttock is usually the first symptom, but there may also be pressure symptoms from involvement of the nerves. Then as a rule comes a gluteal swelling, small if the aneurysm is intact, large if it has ruptured. (Although, as in a case reported by Haggard, an unruptured aneurysm may be "enormous") Till the blood has clotted the swelling will give an expansile impulse with perhaps a thrill and a bruit.

Diagnosis.—A careful history and examination will be of great value and further information may be obtained by aspiration of the swelling and by radiography. It may be difficult to distinguish a ruptured aneurysm from an abscess, from osteosarcoma (which may be pulsatile), and from rarer conditions such as lymphosarcoma.

Prognosis.—Matas says that gluteal aneurysms "tend to rupture spontaneously and sometimes choke up the thigh with massive extravasations of blood which cause death from hæmorrhage very rapidly".

Treatment consists in ligating the internal iliac artery and obliterating the sac to prevent recurrence (Haggard, Frost, Adams, Maguire). Where the aneurysm is small, a proximal and distal ligation with extirpation of the sac may be satisfactory. Adams describes in detail the treatment of an aneurysm developing after a gunshot wound thus:—

First operation. Ligation of the internal iliac artery with subsequent disappearance of the swelling which, however, recurred in a week's time. **Second operation.** Ligation of the gluteal and obturator arteries in the pelvis. This was ineffective. **Third operation.** the sac was incised and the vessels entering the sac ligated (Antyllus's operation). This was successful.

We wish to thank Dr F W Eurich and Dr Messer for allowing us to publish this case.

REFERENCES

- (Continued from previous page)
- 17 Kellogg E L and Kellogg W A (1933) *Amer J Surg* 21 368
 - 18 Kirklin B R (1929) *Radiology*, 12 377
 - 19 — (1933) *Proc Mayo Clin* 8 929
 - 20 — (1934a) *Amer J Digest Dis* 1 260
 - 21 — (1934b) *Amer J Roentgenol* 31 581
 - 22 Konjetzny G E and Puhl H (1929) *J erh dtsch path Ges* 36
 - 23 — (1931) *Beitr Klin Chir* 152 552
 - 24 — (1932a) *Zbl inn Med* 53 225
 - 25 — (1932b) *Chirurg* 4 402
 - 26 — (1934) *Arch Klin Chir* 129 139
 - 27 — (1936) *Med Klink* 32 473
 - 28 Rivers A B and Wilbur D L (1931) *Ann intern Med* 4, 1265
 - 29 Selfert E (1926) *Arch Klin Chir* 141 667
 - 30 Sencerich R L (1932) *Ind State Med Soc J* 25 117
 - 31 Smith J S K and Tom A (1933) *Brit med J* 1 362
 - 32 Techeboks Sarow M N (1929) *Wien klin Wochr* 42 971

- Adams A W (1923) *Lancet* 1 697
- Frost H M (1916) *Ibid* 2 942
- Haggard W D (1922) *Ann Surg* 76, 520
- Maguire D L (1926) *Ann Surg* 84, 760
- Matas quoted by Haggard
- Rupp quoted by Haggard
- Williams L H (1929) *Urology Surg* 65 206

mice used was 12, so that the average number of days survived was $100/12=8.3$

The above protocol can, therefore, be reduced to the figures shown in Table II which are available for comparison with other experiments provided the lethal dose of the infecting organism remains constant in size and virulence

Table III summarises multiple experiments using various compounds. The figures in the last column provide a reasonable assessment of comparative efficiency

In addition to the compounds shown in Table III some 28 other synthetic sulphonamide derivatives have been tested. Of these, two show considerable promise

(1) 4,4'-diaminobenzenesulphonamide tartrate (oral) had an average day survival figure of 7.5 with a dose of 10 mg in experiments involving 48 mice

(2) 4,3'-diaminobenzenesulphonamide (oral) had an average day survival figure of 7.1 with a dose of 20 mg in experiments involving 54 mice

Conclusions—Experimentally the following oral compounds are effective in the treatment of streptococcal infections in mice: *p*-aminobenzenesulphonamide, *p*-benzylaminobenzenesulphonamide, 4,4'-diaminobenzenesulphonamide tartrate and 4,3'-diaminobenzenesulphonamide. Of the soluble compounds, Prontosil (soluble) and disodium *p*-(γ -phenyl-propyl-amino) benzenesulphonamide α - γ disulphonate are less efficient than either of the above oral preparations, but are themselves equally effective

HUMAN STREPTOCOCCAL INFECTIONS

Prontosil (soluble) has been shown to be effective in puerperal infections (Colebrook and Kenny 1936 a, b), in erysipelas (Becker 1937), and in a number of other lesions which are reported singly or reviewed in annotations in *The Lancet* or *British Medical Journal* of 1936 and the current year. Foulis and Barr (1937) report favourably on *p*-aminobenzenesulphonamide in puerperal infections

TABLE IV

Disease	Cases	Success	Failure	Toxic complications
Streptococcal septicæmia	5	4	1	Nil
Erysipelas	2	2	0	"
Tonsillitis	0	7	2	"
Cellulitis	1	1	0	"

p-benzylaminobenzenesulphonamide has been less widely reported on but was found to be effective in erysipelas by Bloch Michel, Conte, and Duvel (1936) and by Peters and Havard (1937), the latter also report success in other types of streptococcal infection. My own experience with a limited number of cases proved the effectiveness of the substance in erysipelas, streptococcal septicæmia, streptococcal tonsillitis, and streptococcal cellulitis. This experience is set out in Table IV. All the patients received 2 tablets (0.5 gramme) of *p*-benzylaminobenzenesulphonamide three times a day.

EXPERIMENTAL INFECTIONS IN MICE WITH MENINGOCOCCUS

Experiments were carried out using a technique similar to that described by Proom (1937). To Dr R. A. O'Brien I am indebted both for the culture used by Proom and for a supply of mucin. The assessment

of experimental infections is very difficult owing to the relatively low virulence of the organism for mice. Huge doses of culture have to be used and mucin must be added to make the inoculation effective, a method for exalting mouse virulence has not yet been satisfactorily devised.

Table V is a typical protocol

TABLE V

No. of organisms	No. of mice	Received.	Deaths on given day—							Survived 1 week	Average survival day (7)
			1	2	3	4	5	6	7		
10 ⁸	6	Nil	1	5	0	0	0	0	0	0	0.8
10 ⁷	6	"	1	3	0	0	0	0	0	3	2.8
10 ⁶	6	"	0	2	0	0	0	1	0	3	4.6
10 ⁵	6	<i>p</i> -aminobenzenesulphonamide 25 mg (three doses only)	1	0	0	0	0	0	0	6	5.8
10 ⁴	6		1	0	0	0	0	1	0	4	3.5
10 ³	6		0	0	0	0	0	0	0	0	7.0

As the result of a series of experiments for the testing of various compounds the following average day survivals were obtained over an observation period of 7 days, using 10⁸ dose of culture. Control 10⁸ (42 mice) 0.75 days, *p*-aminobenzenesulphonamide, 25 mg (24 mice) 4.1 days, *p*-benzylaminobenzenesulphonamide, 50 mg (18 mice) 0.6 days, disodium *p*-(γ -phenyl-propyl-amino) benzenesulphonamide α - γ -disulphonate, 30 mg (12 mice) 0.8 days, 4,4'-diaminobenzenesulphonamide tartrate, 10 mg (12 mice) 4.2 days, 4,3'-diaminobenzenesulphonamide, 20 mg (12 mice) 1.2 days.

Conclusion—*p*-aminobenzenesulphonamide is effective against meningococcus as previously found by Proom (1937), this is borne out by preliminary clinical reports (Schwentker, Gelman, and Long 1937). 4,4'-diaminobenzenesulphonamide tartrate is equally effective.

TABLE VI

Showing Toxicity of Various Compounds and Comparative Efficiency in Experimental Infections in 20-gramme Mice

Compound	Infection	Dose (mg)	Efficiency figure (with maximum possible in parentheses)	Toxicity to 20 g. mice
Prontosil (soluble) (subcutaneous)	Streptococ	7.5	0.8 (10)	80 mg (subcut.) is tolerated (Medien and Chemie 1936)
<i>p</i> -aminobenzenesulphonamide	Streptococ	25	7.7 (10)	Markedly toxic at 50 mg. Fatal at 150 mg.
	Meningococ	25	4.1 (7)	
	Pneumococ	25	1.2 (7)	
<i>p</i> -benzylaminobenzenesulphonamide	Streptococ	50	7.9 (10)	Non toxic at 200 mg (Halpern and Mayer 1937)
	Meningococ	50	0.6 (7)	
	Pneumococ	50	0.5 (7)	
Disodium <i>p</i> -(γ -phenyl-propyl-amino) benzenesulphonamide α - γ disulphonate	Streptococ	10	6.6 (10)	Slightly toxic at 200 mg (Halpern and Mayer 1937)
	Meningococ	10	0.8 (7)	
	Pneumococ	30	0.9 (7)	
4,4'-diaminobenzenesulphonamide tartrate	Streptococ	10	7.5 (10)	Non toxic in doses of 60 mg
	Meningococ	10	1.2 (7)	
	Pneumococ	10	3 (7)	
4,3'-diaminobenzenesulphonamide	Streptococ	20	7.1 (10)	Non toxic in doses of 100-150 mg
	Meningococ	20	1.2 (7)	
	Pneumococ	20	4 (7)	

Streptococ meningococ, pneumococ = streptococcus meningococcus pneumococcus

PNEUMOCOCCUS

A small number of experiments have been performed with pneumococcus Type I. No evidence has been found that either *p*-aminobenzenesulphonamide or *p*-benzylaminobenzenesulphonamide or the disodium sulphonamide sulphionate compound has any action in preventing death in experimental infections. On the other hand both 4,4-diaminobenzenesulphonanilide tartrate and 4,3-diaminobenzenesulphonanilide have a definite protective action. An indication of this is given in Table VI.

TOXICITY IN THE HUMAN SUBJECT

Prontosil (soluble) and *p*-aminobenzenesulphonamide have an irritant action on the urinary tract in a large proportion of cases (Colebrook and Kenny 1936a Foulis and Barr 1937) sulphæmoglobinæmia is also common (Colebrook and Kenny 1936a Foulis and Barr 1937 Paton and Eaton 1937). In the human subject no cases of nervous-system complications such as occur in mice have been reported but one such has come to my knowledge.

No cases of sulphæmoglobinæmia occurred during the treatment of 215 cases of streptococcal infection with *p*-benzylaminobenzenesulphonamide by Peters and Havard (1937) nor have any been observed in my own experience of some 20 cases. Nausea and vomiting are seen occasionally with all three preparations.

DISCUSSION

The aim of any therapeutic procedure is to combine efficiency with safety. The efficiency of the various compounds available for the treatment of streptococcal infections is summarised in Table VI where the known toxic doses for mice are also stated. The most common complications with *p*-aminobenzenesulphonamide are sulphæmoglobinæmia and methæmoglobinæmia and though there appears to have been very little mortality from these complications they cannot be regarded as a desirable burden for even a convalescent patient to bear. *p*-benzylaminobenzenesulphonamide would appear less likely to produce these complications both from experimental evidence and from clinical report; the substance is equally active and is therefore worthy of clinical trial.

As to the soluble compounds there is again a bigger margin of safety with disodium *p*-(γ -phenyl)propyl amino) benzenesulphonamide α - γ -disulphonate than with prontosil (soluble) as judged from animal experiment. And in my own experience I have given 20 c.cm. of the first named compound daily for five days by the intravenous route without the slightest toxic symptom; experimentally there is nothing to choose between the efficiency of the two compounds.

It should be noted that *p*-benzylaminobenzenesulphonamide and the soluble disodium sulphonamide sulphionate compound are both inactive in meningococcal infections whilst *p*-aminobenzenesulphonamide is active. All three compounds are quite inactive in pneumococcal infections.

SUMMARY

(1) The oral preparations *p*-benzylaminobenzenesulphonamide and *p*-aminobenzenesulphonamide are equally effective in experimental streptococcal infections. The former is very much less toxic than the latter.

(2) Of preparations for injection prontosil (soluble) and disodium *p*-(γ -phenyl)propyl-amino) benzenesulphonamide α - γ -disulphonate are equally effective in experimental streptococcal infections; the latter is less toxic than the former.

(3) *p*-aminobenzenesulphonamide is effective in experimental meningococcal infections. *p*-benzylaminobenzenesulphonamide and disodium *p*-(γ -phenyl)propyl amino) benzenesulphonamide α - γ -disulphonate are inactive.

(4) Two diaminobenzenesulphonanilide compounds have been found to have a considerable polyarticular action; they are well tolerated and one protects against streptococcus pneumococcus and meningococcus the other against streptococcus and pneumococcus.

I am greatly indebted to Messrs. May and Baker Limited for supplies of *p*-benzylaminobenzenesulphonamide (Proseptazine) of disodium *p*-(γ -phenyl)propyl amino) benzenesulphonamide α - γ -disulphonate (Soluseptazine) and of the other experimental products referred to in this paper.

REFERENCES

- Becker W. (1937) *Derm. Wochschr.* 104 231.
 Bloch Michel H., Conte M. and Durel P. (1936) *Pr. méd.* 44 1583.
 Buttle, G. A. H., Parish, H. J., McLeod M. and Stephenson, D. (1937) *Lancet*, 1 681.
 Colebrook, L. and Kenny M. (1936a) *Ibid.* 1 1279.
 — (1936b) *Ibid.* 2 1319.
 Foulis M. A. and Barr J. B. (1937) *Brit. med. J.* 1 415.
 Halpern B. N. and Mayer R. L. (1937) *Pr. méd.* 45 747.
Medizin und Chemie (1936) 3 21 (Bayer).
 Paton J. P. J. and Eaton, J. C. (1937) *Lancet* 1 1139.
 Peters, B. A. and Havard R. V. (1937) *Ibid.* 1 1273.
 Proom H. (1937) *Ibid.* 1 10.
 Schweitzer F. F., Goldman S. and Long P. H. (1937) *J. Amer. med. Ass.* 108 149.

DEATH FROM AGRANULOCYTOSIS AFTER TREATMENT WITH PRONTOSIL FLAVUM

By J G G BORST M.D.

SENIOR ASSISTANT IN THE INTERNAL HOSPITAL DEPARTMENT OF MEDICINE, UNIVERSITY OF AMSTERDAM

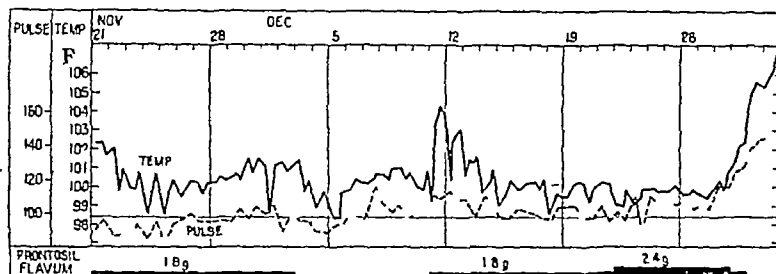
ALTHOUGH the benzenesulphonamide compounds were introduced only a few years ago they are already widely used. Originally they were given only in streptococcal infections but lately they have also been recommended for meningococcal infections¹ and pyelocystitis.² It soon became clear however that they were liable to have serious toxic effects and cases of sulphæmoglobinæmia,³ methæmoglobinæmia⁴ and nitritoid crisis⁵ have been reported.

Between September and December 1936 I treated 13 cases of *B. coli* pyelocystitis with Prontosil Flavum and 5 of these developed toxic symptoms. One patient became dyspnoeic and developed Cheyne Stokes respiration; she was seriously ill for one day but not cyanotic. As in September I had not yet read Colebrook's article⁶ I did not test the blood for sulphæmoglobin and methæmoglobin; the number of leucocytes and the differential leucocyte count were normal. Three patients complained of paresthesia in the face and of the hands; two of them at the same time had sensory disturbances; while doing their hair they could not actually feel it. None of these patients received more than six tablets of 300 mg. prontosil flavum daily and after discontinuing administration of the drug the symptoms disappeared in a few days.

The fifth patient developed agranulocytosis.

She was a woman of 61 and was taken into the wards on Nov. 21st 1936 for pyelocystitis. In 1922 and 1926 she had been treated in the gynaecological ward for haemorrhagic discharge and gum bleeding while blue

patches were showing on her arms also. The treatment then given included curettage, irradiation of the spleen with X rays, injection of horse serum of the patient's own blood, and of gelatin. A diagnosis of thrombopenic purpura was made (A complete history of the case is unfortunately not available.) In 1929 she was examined in the out patient department of Prof Rutting because she had a few ptechie on her legs. A blood count showed red cells, 4,420,000 per c mm, hæmoglobin, 83 per cent, platelets, slightly increased (estimated roughly), white cells, 10,500 per c mm (eosinophils 2 per cent, basophils 1½ per cent, stab cells 7 per cent, polymorphonuclears 45½ per cent, lymphocytes 37 per cent, monocytes 7 per cent). No important symptoms of disease developed



Temperature and pulse chart showing dosage of prontosil flavum administered (1.8 g and 2.4 g daily)

after 1929, and the patient suffered from nothing except frequency of micturition

A fortnight before admission pains in the loins and strangury developed, the urine becoming cloudy and foul. On admission on Nov 21st her temperature was 39°C (102°F). Nothing abnormal was found in lungs, heart, or abdomen. The urine contained ½ per mille albumin, and was full of pus and coli bacilli. A blood count on Nov 23rd showed 8000 white cells per c mm (eosinophils 2 per cent, metamyelocytes (juveniles) 1 per cent, stab cells 12 per cent, polymorphonuclears 51 per cent, lymphocytes 11 per cent, plasma cells 7 per cent, and monocytes 10 per cent. The Wassermann and Sachs Georgi test were negative, the sedimentation rate of the blood was 83 mm in the first hour. From Nov 21st till Dec 3rd the patient received daily six tablets of 300 mg prontosil flavum. At first the temperature dropped, but after a few days it rose again to 39°C (see Chart), though the urine contained neither leucocytes nor bacteria, and a culture remained sterile. The patient had no complaint. The prontosil treatment was discontinued, the temperature dropped, but leucocytes and coli bacilli reappeared in the urine, and after a few days the temperature went up again.

On Dec 11th prontosil treatment was resumed, but half an hour after taking the first two tablets the patient had cold shivers, the temperature rising to 40°C (104°F). The blood showed the full picture of infection with 14,000 white cells (polymorphonuclears 62 per cent, stab cells 28 per cent, metamyelocytes (juveniles) 2 per cent, lymphocytes 1 per cent, and monocytes 13 per cent). The number of platelets, roughly estimated, was normal. Hæmoglobin 78 per cent. The patient complained of pain in the left side, and there was much tenderness on pressure in the region of the left kidney.

From Dec 11th to 21st the patient again received six tablets of prontosil flavum daily, and again the leucocytes and bacteria disappeared from the urine within a few days, while the temperature dropped. But this time also the temperature did not become quite normal as it varied between 37.2 and 37.8°C. As I suspected that, although the urine was sterile, the infection of the kidney itself had not yet been cured, I increased the dose of prontosil to eight tablets daily on Dec 22nd.

On Dec 28th the patient complained of general discomfort the temperature in the evening being 38.1°C (100.5°F). No special attention was paid to this because there was an outbreak of influenza among the other patients, four of nine women in the ward having temperatures above 38°C. On Dec 29th the patient showed tympanic

percussion of the left lower lobe accompanied by bronchial breath sounds, the temperature rising to 39°C (102.2°F). Prontosil treatment was discontinued. A blood count on Dec 30th showed hæmoglobin 70 per cent, red cells, 3,330,000 (slight anisocytosis), reticulocytes 0.8 per cent, platelets (of normal appearance under the microscope), 270,000 per c mm, white cells, 1225 (eosinophils 0, basophils 2½ per cent, polymorphonuclears, 25 per cent, lymphocytes 83½ per cent, monocytes 11½ per cent). That same evening the patient had difficulty in swallowing the throat being slightly red. On the morning of Dec 31st the number of leucocytes had dropped to 900 per c mm, the differential count being polymorphonuclears 1 per cent, lymphocytes 87 per cent, monocytes 12 per cent. In

the afternoon the patient died. Post mortem atelectasis of the left lower lobe was found, no signs of pneumonia were apparent either naked-eye or on microscopical examination. Also the angina was not demonstrable any more, it certainly had not been severe during life. There were no more signs of inflammation of the bladder and left and right pelvis, sections of the kidneys showed a few small round-cell infiltrations in the medulla, otherwise kidneys were normal. No abnormalities to account for the high temperature and death were found. As the autopsy took place 28 hours after death, the films taken from the bone

marrow were (as was expected) unsuitable for drawing any conclusions.

During her stay in the wards this patient had no remedies except prontosil flavum, some dilute hydrochloric acid to facilitate its absorption, and (on Dec 10th) 15 grammes of castor oil. There can I think be no doubt about the close connexion between the use of prontosil flavum and the occurrence of agranulocytosis in this case, but the patient's unusual previous history may indicate some predisposing disease of the bone marrow.

It is not clear why so many of the 13 patients in this series showed toxic symptoms during prontosil treatment. With 2 exceptions, none of the patients were seriously ill before they were treated, during the whole course of their illness I had had no fever. Prontosil flavum is generally given to patients suffering from streptococcal sepsis, and where the illness is already severe slight symptoms of intoxication are not easily recognised, so that even a serious complication like agranulocytosis may not alter the clinical picture radically enough to attract attention. In the case recorded here the first diagnosis was one of influenzal pneumonia.

As a result of our unfavourable experience prontosil flavum treatment was stopped, but in 11 more cases *p* aminobenzenesulphonamide (Prontosil Album) was given. This drug also caused toxic effects, but these were fairly harmless. In all patients feeling ill or having fever, the blood was repeatedly examined, but no qualitative or quantitative abnormalities of the leucocytes were found.

REFERENCES

1. Battle G. A. H., Gray W. H. and Stephenson D. (1936) *Lancet* 1, 1286. Proom H. (1937) *Ibid* 1, 10. Schwentker F. F., Gelman S., Long P. H. (1937) *J. Amer. med. Ass.* 108, 1407.
2. Imhäuser, K. (1935) *Med. Klin.* 31, 282. Huber, H. (1936) *Munch. med. Wschr.* 3, 2014. Unshelm E. (1936) *Arch. Kinderheilk.* 109, 60.
3. Colebrook L. and Kenny M. (1936) *Lancet* 1, 1279. Frost L. D. B. (1937) *Ibid* 1, 519. Discombe G. (1937) *Ibid* 1, 526.
4. Paton J. P. J. and Eaton, A. L. C. (1937) *Ibid*, 1, 1159 and 1369.
5. Scharf A. and Friedmann E. (1936) *Bull. Soc. méd. Hôp. Paris* 52, 636.

CLINICAL AND LABORATORY NOTES

A CASE OF PARATYPHOID A

By HENRY COHEN M.D. Liverp. F.R.C.P. Lond.
PROFESSOR OF MEDICINE, UNIVERSITY OF LIVERPOOL;
HONORARY PHYSICIAN, ROYAL INFIRMARY,
LIVERPOOL

A. G. C. FOLLIOTT M.B. Dubl.

AND

HEDLEY D. WRIGHT M.D. D.Sc. M.R.C.P. Edin.
PROFESSOR OF BACTERIOLOGY, UNIVERSITY OF
LIVERPOOL

BEFORE the Great War paratyphoid fever due to *Bact. paratyphosum* A was almost unknown in England. Lohmann (1910) could find no cases recorded from Great Britain up to 1912 and although Windsor (1916) in a study of the bacteriology of the bile, isolated the organism in two cases neither of these patients gave a history of enteric infection. During the war the incidence of the disease increased but, as Bruce White (1929) has pointed out the organism for some unknown reason failed to establish itself in western Europe after the war although epidemics due to *Bact. paratyphosum* B have not been infrequent.

We have been able to find records of only two cases in England since 1918. One is reported by Dive (1922) in a patient recently returned from Mesopotamia, and the other by Giry and Gardiner (1934) which appears to have been of local origin (Bristol). Both these cases were diagnosed serologically and the reactions in the second were somewhat anomalous. The literature however probably does not represent the actual frequency at all accu-

CASE RECORD

Our patient was a healthy man aged 26 with no relevant previous illnesses. He first experienced slight malaise on Oct. 1st 1936 but remained at work until the afternoon of the 2nd when he had to return home early because of abdominal discomfort which gradually intensified and was later associated with vomiting. He was first seen by A. G. C. on the morning of Oct. 3rd with generalised abdominal tenderness and a temperature of 100 F. There were no local signs, and next day although the abdominal pain had subsided his temperature was 101 F. and he complained of constipation. On Oct. 5th his temperature rose to 102 F. and he had severe headache though his general condition was unchanged.

The accompanying Chart records the course of the temperature from the evening of Oct. 6th onwards. On the 7th an enteric infection was suspected but agglutinations were negative and fecal culture showed no typhoid or paratyphoid bacilli. A blood culture on Oct. 8th was sterile. On the 10th two rose spots appeared on the abdomen, but the spleen was not palpable. On the 12th agglutinations were again carried out with negative results. Next day he was seen by H. C. still complaining of headache, generalised abdominal discomfort, profound weakness and constipation. He had the characteristic appearance of an enteric patient with a few rose spots on the abdomen, but the spleen was still not palpable. There was a slight bronchitis but no other chest trouble. The clinical diagnosis of an enteric infection was made and further blood tests advised. On Oct. 16th—i.e. fifteen days after the first clinical evidence of infection—a positive agglutination reaction to *Bact. paratyphosum* A was found in a dilution of 1 in 100. On the 17th he had a severe intestinal haemorrhage with profound collapse, aggravation of his abdominal pain, and his pulse rate rose to 120. Next day he passed a large quantity of blood per rectum and his previous apathy gave place to irritability. On Oct. 18th the agglutination to *Bact. paratyphosum* A rose to 1 in 320 and on the 22nd the organism was recovered from the faeces though the urine remained sterile. Gradually his clinical condition improved and his temperature remained normal after Nov. 3rd. On Nov. 27th his urine and faeces were both free of organisms of the enteric group.

Throughout the illness the spleen was not palpable; the patient had no natural movement of the bowel except on the day following the haemorrhage, there was never abdominal distension despite the fact that feeding was chiefly per rectum as the patient refused to take food by the mouth.

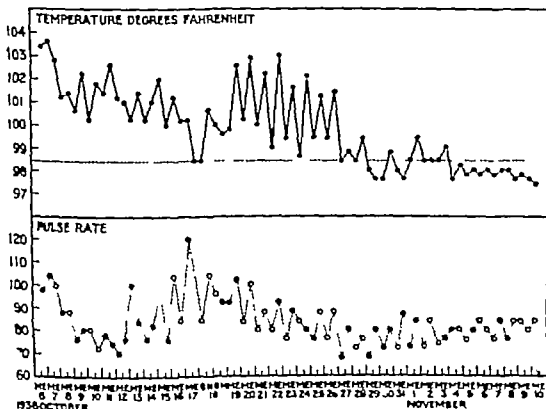
DISCUSSION

In attempting to find a possible source of infection, we ascertained that the patient had travelled to Hamburg on August 22nd returning on the 29th. If it be assumed that the infection occurred outside this country the incubation period would be at least thirty-three days. The man who shared the cabin with our patient was tested for agglutinins and his urine and faeces were cultured with

negative results. Although the incubation period seems lengthy if the infection occurred outside this country it is within known limits. Vincent and Muratet (1917) described a case of laboratory infection in typhoid fever where symptoms appeared first on the fortieth day.

It should be noted that the serum was in all cases

cc3



Temperature and pulse chart

ately Dr W. M. Scott (of the Pathological Laboratory Ministry of Health London) informs us that the number of official notifications of *Bact. paratyphosum* A for England since the war is three in 1921 one in 1926 one in 1927 and three in 1928. It is not certain but appears probable that all these diagnoses were based on agglutination tests.

tested against *Bact typhosum* (H and O), *Bact paratyphosum* B (H type, H group and O), and *Brucella abortus* as well as *Bact paratyphosum* A. In all cases reactions with these organisms, other than with *Bact paratyphosum* A, were completely negative (i.e., no reaction occurred in a dilution of serum of 1 in 20). The relatively late appearance of a positive Widal reaction in cases of *Bact paratyphosum* A has been noted by MacAdam (1918). In one mild case he noted its first appearance on the twenty first day, in one severe case after the fourth week, and in another in the fifth week.

The media used for the isolation of the organism from the faeces were brilliant-green eosin agar plates and sodium tetrathionate broth (Jones 1936). The interesting point was that the culture was obtained by directly plating the faeces on the brilliant green eosin agar but no growth was obtained when the faeces were inoculated into tetrathionate broth and this was plated on the solid medium after 24 hours' incubation. This enrichment method has proved very satisfactory with *Bact typhosum* and *Bact paratyphosum* B. A few experiments indicate that it is not suitable for *Bact paratyphosum* A, but it requires to be tested on more strains. Krumwiede (1917) found *Bact paratyphosum* A in the faeces most frequently in the first week.

SUMMARY

A case of paratyphoid A is recorded in which the infection occurred probably outside this country. The agglutination reaction was negative on the twelfth day but positive on the sixteenth. The organism was recovered from the faeces on the twenty second day.

REFERENCES

- Dive G H (1922) *Jour R Army Med Cps* 38 300
 Gray J D A, and Gardiner A D (1934) *Lancet*, 2 21
 Jones E R (1936) *J Path Bact* 42 455
 Krumwiede C (1917) *J infect Dis* 21 141
 Lehmann E (1916) *Zbl Bakt (Orig)* 78 49
 MacAdam W (1918) *Jour R Army Cps* 31, 208
 Vincent H and Muratet L (1917) *Typhoid and Paratyphoid*
 Fevers. English Translation edited by J D Rolleston
 London 1917
 White P. Bruce (1929) *A System of Bacteriology Med Res*
 Coun London vol IV, p 124
 Windsor, J F (1910-11) *Quart J Med* 4, 113

AN UNUSUAL CASE OF GALL STONES

By JOHN MACKAY, M D Glasg., D P M

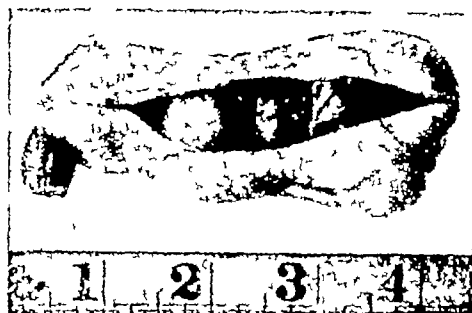
ASSISTANT MEDICAL OFFICER, COUNTY MENTAL HOSPITAL
 WHITTINGHAM PRESTON

A MAN, aged 44, was admitted to the County Mental Hospital, Whittingham Preston, on April 3rd, 1901. He had delusions of persecution, he was noisy and excited at times, and he suffered from auditory hallucinations. During 36 years' stay in hospital he remained deluded and was often querulous and irritable. He was convinced that there was a conspiracy against him and that electricity was being passed through him. He maintained fair health, however, until the early part of 1933, when he showed signs of cardiac insufficiency, and he slowly deteriorated physically up to the time of his death at 80 years of age on March 13th, 1937.

Post-mortem examination revealed advanced arteriosclerosis and myocardial degeneration. The mitral and tricuspid valves were thickened. But the most striking finding was a greatly enlarged gall bladder,

4½ in in length (see Figure). It contained three large stones and numerous small ones. The measurements of the three large stones were 1.25 x 1 in, 1.2 x 0.6 in, 1.75 x 2 in. The wall of the gall bladder was tightly stretched over the stones, and there was no bile present.

This case is unusual for several reasons. Firstly, although the patient was of the querulous type, he never once made complaint of abdominal pain. Secondly, routine physical examination conducted by



The gall bladder containing its stones

several medical officers failed to determine any abdominal tenderness. Thirdly, his delusional locus was the head and not the abdomen, as he imagined that electrical influences were destroying the hair of his head and were making him deaf.

I have to thank Dr A R Grant, medical superintendent, and Mr J Gates, chief laboratory assistant, for their help and interest in this case.

DUODENAL DIVERTICULA

Writing in the *Riforma Medica* (1937, 53, 590) M Donati describes a case of diverticulum of the third part of the duodenum.

The patient was a married woman aged 43. At the age of 20 she began to suffer from attacks of diarrhoea, lasting a few days and recurring at intervals of about a month. These went on for about five years, after which she was much troubled by constipation. For a year she suffered from a sense of weight in the epigastrium, increased by lying down and relieved by standing, and accompanied by distaste for food. As medical treatment failed to cure her, an X ray examination was made, and revealed a large diverticulum in connexion with the inferior limb of the duodenum. Soon afterwards the patient had an attack of acute epigastric pain and nausea, lasting 12 hours. This attack was repeated a month later and after a second (confirmatory) X ray examination, operation was decided upon. The diverticulum, which consisted only of mucosa and submucosa, was dissected out after incising the peritoneum over it, and removed. The resulting aperture in the duodenum was sutured transversely so as to avoid narrowing the lumen. Convalescence was uneventful and the symptoms were completely relieved.

Discussing the origin of these diverticula and the indications for operation, Donati emphasises the importance of a confirmatory radiography since the appearances may be deceptive and may lead to the performance of an unnecessary laparotomy. The operative procedure to be adopted can only be decided after the abdomen has been opened, the ideal is removal of the diverticulum and suture of the bowel but it may not be possible to carry this out, and in complicated or very difficult cases the surgeon may have to fall back upon a palliative operation such as gastrojejunostomy.

MEDICAL SOCIETIES

ASSOCIATION OF CLINICAL
PATHOLOGISTS

THE summer meeting of this association was held on June 12th in the pathological department of the Royal East Sussex Hospital, Hastings. Dr P. LAZARUS-BARLOW, pathologist to the hospital, occupied the chair and the meeting was devoted to various aspects of the problems of

Blood Transfusion

Dr H. F. BREWER, medical officer to the London Blood Transfusion Service, spoke on the organisation and medical administration of a voluntary blood transfusion service. He commended the aim of the British Red Cross Society to co-ordinate all such services in a national scheme. The routine running of a transfusion service was best carried out by a body independent of the hospitals making use of the donors and its medical administration was preferably centralised in the hands of a clinical pathologist. Dr Brewer advised a full re-examination of donors after ten (and multiples of ten) donations. He considered the safe minimum time interval between bleedings to be three months for men and four months for women, but there was no need to limit the number of donations given. The needle method of extraction of blood was alone permissible. Certain desiderata were emphasised—the withdrawal of blood from a donor only in the supine position, the avoidance of direct arm to arm technique, the use of a local anaesthetic at the site of needle puncture, the exclusion of iodine in the dressing and the elimination of overbleeding. He paid a tribute to Mr P. L. Oliver, the founder and honorary secretary of the London service.

The PRESIDENT (Dr S. C. Dyke) described the blood transfusion service organised for the Royal Hospital, Wolverhampton (his paper appears on p. 1538).

STORED BLOOD

Dr NORA SCHUSTER (London) described some of the experimental work on the keeping properties of blood. She said that the red cells in ordinary citrated blood remained intact for about 21 days after which hæmolytic begins. They could be preserved longer by adding glucose to the blood, and in certain physiological fluids they had been kept intact for 180 days. Red cells would remain physiologically active in the circulation of a recipient animal after having been kept for 14 days. Red cells could be kept for four weeks and retain their power of absorbing oxygen. She described the Russian method of storing blood taken from a cadaver a few hours after sudden death, which had the advantage that more could be collected from the donor and that there was no need for the addition of citrate on account of fibrinolysis. She also described methods used in France, Spain and South America for storage of blood from living donors. The medical service of the Government forces in Spain in the course of the present rebellion were using blood stored in ampoules under a positive pressure of two atmospheres for emergency use on the field. The blood was usually of Group A or O. It was administered straight into the vein from the ampoule, usually by medically unqualified orderlies or nurses. The usual period of keeping was three to four weeks. Dr Schuster showed photographs of the service supplied through the courtesy of Mr Oliver of the London

Blood Transfusion Service. Experience showed that there was no likelihood of damage from infection or the development of toxins in blood stored for one month. She discussed the possible toxic effects of hæmolytic and referred to experimental work by Bayliss from which he concluded that hæmolytic as such, was not harmful. Dr Schuster suggested that it might often be more convenient to collect blood and store it for emergencies rather than arrange for donors at short notice.

Dr R. V. Facer (Bournemouth) stated that he had on a number of occasions given blood which had been stored in the ice-chest for various periods. Nothing untoward had ever happened after six days storage. On one occasion after two weeks storage the recipient had shown jaundice and hæmoglobinuria, but there had been no serious constitutional symptoms.

Dr A. F. S. SLADDEN (Swansea) asked whether the fact that the blood in the Spanish Government Service was stored under increased atmospheric pressure might not be the explanation of its keeping qualities.

Dr J. OLIVER (London) said he was in the habit of storing blood in the ice-chest for periods up to two weeks. During the period of storage oxygen was slowly bubbled through the blood. Such blood for transfusion purposes appeared to have all the qualities of fresh blood.

Dr BREWER reported that he had twice seen severe allergic reactions after the use of stored blood. He thought that more work was required before the practice could become a matter of routine.

REACTIONS AFTER TRANSFUSION

Dr J. A. BOYCOTT (London) described three cases of anomalous blood grouping reactions. (1) A blood of Group AB appeared to be of Group A, the B agglutinating being very weak, was only demonstrated later. (2) A patient apparently of Group O was transfused with blood from a donor of that group but developed the symptoms of intravascular agglutination and died. Post mortem examination showed the usual blockage of the urinary tubules with disorganised blood pigment. The recipient's serum was subsequently found to agglutinate with the donor's red cells in vitro. Both the red cells of donor and recipient were checked and were found to be inagglutinable by the grouping serum used. It was possible that the recipient was actually of Group A or AB, and that his serum contained anti O agglutinins. (3) The serum of a patient apparently of Group AB was found to agglutinate the red cells of a known AB subject. Later it was found to agglutinate his own red cells. On putting up the red cells of this subject against known anti A and B serum at incubator temperature no agglutination occurred. Actually he belonged to Group O and the phenomenon was that of cold agglutination in this instance occurring up to a temperature of 25°C. All these cases illustrated the danger of placing too much reliance on grouping alone and the necessity of careful matching of bloods for transfusion purposes.

Dr R. J. V. PULSTHART (London) in describing certain abnormal reactions first referred to some of the effects of infusion of simple saline. In a number of cases coming to autopsy after saline infusions he had found œdema of the lungs and of other viscera, particularly the heart. He suggested that physio-

logical solutions such as that of Hartmann were preferable to normal saline. Certain reactions after transfusion of blood were in his opinion allergic, he described one case in which a transfusion was followed by severe urticaria. Four cases of transfusion with incompatible blood were described, in no case was the amount infused over 300 c cm, and all the patients recovered. Incompatible blood had been administered owing to wrong grouping, this being due to loss of potency of the grouping serum through addition of phenol as a preservative. Dr Pulvertaft stated that he had injected doses of 5-20 c cm of incompatible blood at weekly intervals into patients over long periods, no untoward symptoms had developed, and he considered sensitisation to blood previously given from the same donor an unlikely cause of reactions. He described four cases of hæmoglobinuria after transfusion in hæmolytic anæmia. The infused red cells being normal ought theoretically not to be susceptible of lysis, perhaps in these diseases the organism attained a certain red cell level and on infusion it was the subject's own red cells, and not those of the donor, that were destroyed. After splenectomy lysis after infusion of blood did not occur.

Dr N. HAMILTON FAIRLEY (London) pointed out that American figures showed that infusion into an adult of up to 350 c cm of incompatible blood had never caused death while infusion of 540 c cm or over had always done so. This suggested a critical level for the disposal of the products of hæmolysis.

Dr SCHUSTER asked why transfusions of blood are given. Two indications covered all possibilities. They might be given to replace blood in hæmorrhage or in certain of the "idiopathic" anæmias with a view to stimulating in some unknown and unspecified way the blood-forming organs. One of the commonest reasons for which blood was given was "shock." In shock without severe blood loss, transfusion of blood was not required. Far too many transfusions were being performed—Many members expressed their concurrence with this view.

Dr JANET VAUGHAN (London) was of the opinion that transfusions were given far too casually, many of the untoward incidents following transfusions were due to chilling of the infused blood, this was liable to give rise to *in-vivo* cold hæmolysis.

The PRESIDENT believed that reactions after transfusion, apart from those dependent on incompatibility, were due to inattention to essential details. The most important of these were temperature of the blood, the use (in making up solutions) of freshly glass-distilled water only, and strict cleanliness of all apparatus. The simpler the apparatus the more easily it could be kept clean. On that account he used a small glass reservoir from which the blood was run in by gravity. The rubber tubing employed was kept in short lengths which were taken apart for cleaning and united by metal joints for use. The maintenance of all apparatus and solutions in readiness for immediate use demanded the supervision of one person. Since the appointment of a single responsible blood transfusion officer reactions after transfusion had become rare at the Royal Hospital, Wolverhampton.

TECHNIQUE OF TRANSFUSION

Dr H. L. MARRIOTT and Dr A. KEWICK (London) described the uses of the transfusion of blood in large quantities by the continuous drip method. The purpose of the method was to bring the red cells of the blood up to a suitable level as quickly as possible. When large quantities of blood were infused slowly

the red cells remained in the circulation but the fluid elements were excreted. The principal indication for continuous transfusion was persistent bleeding.

Dr LAZARUS BARLOW said that in his opinion the direct method of blood transfusion was the method of choice. The blood transfused was less interfered with in this method than in any other. It did not entail the exposing of the veins of either patient or donor. In nearly 400 transfusions, the great majority of which were carried out by the direct method, no donor's vein had been exposed. A Louis Joubé syringe of 5 c cm capacity was used, No. 17 gauge. Record needles being connected to the syringe by two pieces of thin pressure tubing each about six inches long. The essential point was to keep the piston constantly on the move, once the transfusion had started, in order to prevent clotting. It might be argued that this entailed giving the blood too fast, but no ill effects from this cause had been observed. Dr Lazarus Barlow said that apart from the impossibility of getting two beds alongside one another, the only contra indications were when a constant drip transfusion was required and when a comparatively large transfusion was needed in the case of a patient whose veins were too small to admit a No. 17 gauge needle.

Dr R. OFFICER (London) described a method for post-operative blood and saline transfusion. Patients recovering from long and severe operations required large amounts of water and salt, evidences of salt deficiencies could be got from the urine which in such cases was free from or low in chlorides. Both blood and saline were administered by the "drip" method, and were kept in separate containers, Dr Officer had devised a special apparatus by which a change-over from blood to saline could be effected without undue admixture of the saline and citrated blood. This was important as the addition to citrated blood of saline often led to clotting. As a routine 500 to 700 c cm of blood was given immediately on the return of the patient from the theatre, this was followed by saline at the rate of 3½-4 pints in each twenty-four hours for forty-eight hours. In a series of 27 cases of combined excision of the rectum in which this technique had been employed there had been only 1 death.

APLASTIC ANÆMIA

Dr F. A. KNOTT (London), represented in absence by Dr Cuthbert Dukes, reported on 4 cases of aplastic anæmia treated by repeated transfusions. Dr Knott pointed out that the blood picture could by this means be restored to normal, but there was no means at present of judging whether or not the hæmopoietic system would be capable of maintaining it there. By a careful study of his cases Dr Knott arrived at the conclusion that a continued reticulocytosis was a bad prognostic sign indicating a state of strain on the part of the hæmopoietic system. In three of the four cases such a reticulocytosis had persisted and all had ended fatally. In the fourth case after repeated transfusions the reticulocytosis had disappeared and the patient was now doing well.

INTRAVASCULAR HÆMOLYSIS

Dr FAIRLEY gave a report of his observations on formation of pseudo methemoglobin in intravenous hæmolysis. He pointed out that disintegration within reticulo-endothelial cells was the normal physiological fate of the erythrocyte. Lysis in the blood stream was a pathological event. The clinical syndrome was characterised by sudden rigor, fever,

join pain anæmia hæmolytic jaundice oliguria and perhaps anuria. The pathological lesions consisted of hæmorrhoidosis, blockage of the renal tubules, toxic changes in their lining epithelium and perhaps degeneration of hepatic cells. As to the mechanism involved—extracorporeal hæmoglobin was treated as a foreign substance. Some 10 per cent. was excreted through the glomerulus and appeared in the urine if a pH of less than 6.4 was reached in the tubules, methæmoglobin and possibly acid hæmatin was formed (Dodds). In these circumstances slitting up effects followed which led to oliguria anuria nitrogen retention with high blood urea and renal acidosis characterised by a low plasma bicarbonate low serum calcium and high blood phosphorus. The remaining 90 per cent. appeared to be disposed of by the reticulo-endothelial cell system and liver the oxyhæmoglobin producing hæmatin which gave rise to hæmoglobin and hæmobilirubin. Excess of bilirubin led to pleocholia bilious stools and urobilinuria.

Recent work on blackwater fever by Farley and Bromfield had shown the presence of another pigment in the plasma allied to methæmoglobin but having its α band somewhat nearer the blue end of the spectrum (6240 Å). Unlike methæmoglobin this band was not dispersed with Stokes's reagent ammonium sulphide (10 per cent.) ammonia or hydrogen peroxide (10 vols.). The new pigment was formed both *in vivo* and *in vitro* by the action of plasma on hæmoglobin and was probably an intermediary product in the formation of hæmatin. It was not excreted by the kidneys and from this viewpoint its formation was a conservative process protective to the organism. It was constantly found in severe cases of blackwater fever and is probably ultimately formed in all instances of intravascular hæmolysis.

MEDICAL SOCIETY OF INDIVIDUAL PSYCHOLOGY

At a meeting of this society on June 10th a paper entitled

The Psychological Approach

was read by Dr T. A. Ross. Such an approach he said had two aspects—first the understanding by the physician of his patient's illness and secondly the understanding by the patient of the origins and causes of his illness in so far as these are psychogenic. As regards the doctor's understanding of the patient's illness two views may be contrasted. According to one view there is no psychological approach—no suffering can be accepted as genuine unless there are physical signs and those who complain of such suffering should be handed over to the policeman or the priest—if only these functionaries would do their duty. According to the second view—as expressed for example by Croddick—psychogeny embraces the whole of medicine and is the key to the understanding of every patient. Whether an illness be traumatic or microbial the patient comes by his catastrophe because he wishes it, the catatrophic being preferable to something which it averts. For Croddick intention is the key to everything. But this view is unprovable—anxiety can be found in any case with a good history if we look for it industriously enough and there are many who wish for an illness who do not get it. Indeed many obviously refuse the advantage which their physical illness might confer on them and go about

courageously when they might well be and could be at rest.

Illness even if it has not originated psychogenically must soon be complicated by events. The average man does not want to be ill he wants to do a lot of things which illness will stop—to play or watch football, or play golf or go to the cinema. Illness brings fear anxiety loss of confidence in his doctor resentment against his employers hope of unearned increment and other factors inimical to recovery. Thus truth said Dr Ross lies intermediately between the doctrine of physical causation and that of pure psychogenic causation. It seems obvious that every patient presents both a mental and a physical problem. For this reason among others medical psychologists of all people have much need to look more at their patients and less at their books. Medical psychology has suffered of late from having one clinical observer of outstanding genius with no one quite competent to criticise him effectually and who is surrounded by a cohort of pretensions ready to slay any outside critic who arises.

Dr Ross related that when he began to study the effect of mind on bodily symptoms he was living and working in the Isle of Wight in isolation from others interested in the subject. There were disadvantages in this there were also considerable advantages. There are advantages in having a director supervising one's earlier cases, certainly for the early patients but the pupil tends to become subservient to the teacher to lose his critical faculties, to depend less on the picture provided by the patient and more and more on the master's ideas. When we come to the regulation that every would-be therapist must himself be analysed before he starts treating we have come to the end of originality. No one ever quite recovers from an analysis. The patient may lose his illness but every successful analysis whether of patient or of pupil, must result in the more or less permanent adoption of the analyst's views. One may hope to get a number of people well without making them subjects of transference neurosis; which may sometimes be an incurable neurosis meaning that the doctor shares the illness with the patient instead of some member of the latter's own family doing so.

All sick persons said Dr Ross demand some form of psychological approach. Even a sick horse must be so approached. There are two possible strategic methods for the psychological approach—one is analysis and the other persuasion. Whenever we take a history we probably make an interpretation—some more skillfully than others—and there is little difference between this and analysis. Whenever we give a good or a guarded or a bad prognosis we are using persuasion. Persuasion may be divided into encouragement and discouragement each has its place. There is one pitfall and one only about encouragement: it may be the last thing the patient seeks or desires in that case it may make him worse. The good doctor must believe in his treatment. No one can give encouragement unless he is a rogue about something in which he has no faith.

The analytic approach is of value in the psychoneuroses and in every kind of chronic illness who ever takes a history is fairly sure to begin to analyse. In acute illness like pneumonia or malaria there is almost no analytic approach. The analytic approach does not necessarily mean a deep analysis and a great number of psychoneurotics can be got to remain well for years without any knowledge of their infancy or young childhood. Deep analysis has its uses but every abdominal pain does not call for a laparotomy.

ROYAL SOCIETY OF MEDICINE

SECTIONS OF LARYNGOLOGY AND
OTOLOGY

THE summer meetings of these sections took place at the Norfolk and Norwich Hospital, Norwich, on June 18th and 19th.

At the section of laryngology, with Mr LIONEL COLLEDGE, the president in the chair, a discussion was held on

Orbital Cellulitis due to Sinus Infection

Mr E D D DAVIS, in opening, defined orbital cellulitis as an acute inflammation of all or part of the contents of the orbit, characterised by considerable œdema of the eyelids and conjunctiva. With the progress of inflammation and suppuration the œdema rapidly increased, the eyeball became immobile and displaced forwards, and the conjunctiva was so œdematous that it protruded between the eyelids. On account of the rigidity of the orbital walls the compression and tension were severe, and were contributory factors in the thrombosis of vessels and injury to the orbital contents. The condition was always serious and dangerous, and might terminate in cavernous sinus thrombosis, meningitis, brain abscess, septicæmia, or optic atrophy. Inflammation could extend to the orbit by three paths: by direct spread from the nose through the bone, or along the ethmoidal vessels, by the blood stream when the orbital cellulitis was part of a septicæmia or pyæmia, and by lymphatic spread, but he doubted whether this occurred. In 54 cases of swelling of orbital contents sent him by ophthalmic surgeons for examination of the nose, 24 had suppuration of the frontal sinus and 15 of the ethmoid, 4 were due to injury, 5 had orbital tumour, 2 optic nerve tumour, and there was one each of foreign body with abscess, suppurating cyst, panophthalmitis, and syphilis. The commonest cause in adults was suppuration of the frontal sinus, and in children ethmoidal suppuration. Pus burst through the thin bony floor of the frontal sinus, just to the inner side of the supra-orbital notch, and an orbital abscess was formed between the bone and the orbital periosteum. In a similar way, pus from the ethmoidal cells tracked through the thin os planum or inner wall of the orbit. In some cases the pus was near the foramen of the anterior ethmoidal artery, there was also a second collection in the affected nasal sinus, and both collections must be drained. Injury to the orbital periosteum must be avoided, as it was an effective barrier between the abscess and the delicate orbital contents.

Frontal sinus suppuration involving the orbit produced a downward and outward displacement of the eyeball, and most of the swelling was over the floor of the frontal sinus and at the inner third of the supra-orbital ridge. Ethmoidal suppuration displaced the eyeball outwards. In the majority of cases there were signs of sinus suppuration, and pressure on the external swelling might cause pus to exude into the nose. But a mucocele, which was a closed distension of a nasal sinus, resembled a tumour and might not show signs of inflammation, and in such a case the nose might be normal. A positive skiagram was a valuable confirmation of the diagnosis of sinusitis. When orbital œdema was severe there was reason to fear cavernous sinus thrombosis. In this condition the patient was severely ill with frequent rigors, the œdema was soft and bluish, and extended to the other eye and to the face. Diplopia

on account of paresis of an ocular muscle was an early sign. The pupil was dilated, inactive, and blindness rapidly supervened. It was important to note whether a primary source of infection, such as a boil of the face or middle ear suppuration, was present. Three of the four cases of injury were due to direct blows, and in one of the cases the roof of the orbit was fractured.

Indications of an orbital abscess arising from the nose, were an increasing and brawny œdema of eyelids and conjunctiva, a fixed and displaced eyeball, and excessive pain. Its treatment was always urgent, there should be no hesitation in operating to bring about satisfactory drainage. The cornea must be protected from abrasions, and during the induction of anaesthesia castor oil was dropped into the eye, the eye was closed by means of a stitch passed through the loose skin of the eyelids. A deliberate incision was made along the inner two thirds of the supra-orbital ridge in the line of the eyebrow, and this was carried down below the inner canthus. With the complete arrest of hæmorrhage, gentle retraction and a little dissection enabled the origin of the abscess to be inspected. When a good exposure had been obtained the fistula of the affected sinus was freely enlarged, and the operation was not complete until the suppurating sinus had been attacked from the nose and had been well drained into the latter. He always removed the middle turbinal, and had never had cause to regret this. Of the 37 operated cases 34 had made a rapid recovery and were highly satisfactory. One patient, who had had a previous incision through the upper eyelid, already had meningitis when admitted and died, another died of longitudinal sinus thrombosis. In his series the complications were few.

Dr S H MINGD (Copenhagen) spoke of his experiences in connexion with 86 cases of acute swelling of the orbit, the mortality was 16 per cent. The cause was a sinusitis in 70 cases. The external operation was carried out in 46 cases and 7 died, there were no fatalities, however, in the 24 cases in which the endonasal operation was done. In 46 cases in which sinusitis was verified by operation, the ethmoid alone was involved in 13 and one died, in 5 the frontal alone was affected, with no mortality, in one the maxillary sinus was concerned, in another the sphenoid sinus, and both patients died. In 26 cases two or more sinuses were affected. Often it was difficult, he said, to decide whether a swelling of the orbit was caused by a sinusitis or not, and there was often no history of nasal discharge, aspiration and syringing of the nose might not reveal pus because of a closed empyema. For this reason he had operated even on cases of subperiosteal abscess which had only slight swelling of the mucous membrane, or in which he found pus only in a single ethmoidal cell. Abscess might occur at any age, and there was not necessarily accompanying fever, even in fatal cases. None of the well known signs could be regarded as pathognomonic, and he had come to rely on an examination of the condition of the patient as a whole. Prof Renne had pointed out that in cases of scarlet fever, in which orbital swelling was sometimes very alarming, conservative treatment could nearly always be safely carried out. In the presence of alarming symptoms it was best to operate forthwith as the great danger was eventual intracranial complications. The frontal lobe of the brain being a silent area, indications of these complications might be shown too late. On the slightest suspicious sign, lumbar puncture should be carried out. In children under 5 the frontal sinus was not

usually developed in others he preferred to open not only the ethmoid, but also the frontal sinus.

Mr G H HOWELLS said that the commonest site of the primary infection was the anterior ethmoid. At first there was a pure oedema which had no line of demarcation; hence it was unwise at this stage to embark on any drainage operation as this carried the risk of infecting fresh tissue. Treatment should be as conservative as possible, an attempt being made to drain the sinus by the natural route—namely into the nose, and inhalations, sprays &c were useful. Conservative treatment, if begun early gave considerable prospect of success. It must be realised that surgical complications might arise even after the orbital symptoms had subsided. In cases secondary to osteoma—which might be in the frontal sinus or ethmoid—free drainage through the orbit should first be established, then the offending tumour removed after the subsidence of the acute stage. He had not found it necessary to lose the eyelid by means of a stitch: he had placed a pad of gauze over the eye when operating, and instilled Argylol during convalescence and this he found kept the eye clear. A drainage tube he had always found useful; he brought it down through the nose and kept it in position for four days. The antrum on the affected side was punctured and washed out on alternate days until the washing was clear.

Mr F C W CAPPS said he did not consider a case to have orbital cellulitis unless proptosis was present indicating an abscess. This ruled out cases of oedema of the upper eyelid and supra-orbital region associated with acute sinusitis without true involvement of intra-orbital tissues. While agreeing that supuration was a definite indication for external operation, he could not always feel sure that this had occurred. When in doubt he incised the orbit preferring in these cases the route favoured by ophthalmic surgeons in draining orbital cellulitis leaving the periosteum alone.

The PRESIDENT said that sometimes a small puncture was made in these cases without finding pus but operation revealed that the frontal sinus and ethmoid were full of pus. He spoke of the great change for the better in the outlook of these cases after the use of Prontosil.

Early Bronchiectasis in Children

Dr J H ENNS (Birmingham) read a paper on the relation of early bronchiectasis to ear, nose and throat diseases in children. His material had been gathered from 200 cases: 42.5 per cent of these had gross infection of one or more accessory sinuses and 86.3 per cent had evidence of purulent infection of the middle ear. Whooping cough and measles accounted for a large proportion of the cases of bronchiectasis in children but ulcerative bronchitis and severe bronchio pneumonia were the direct causes. The danger period was the first two years of life; in 360 cases of pneumonia 50 per cent were under two, a third were without symptoms, a third had pulmonary catarrh. The younger the child the more severe was its lung condition: respiratory affections caused more damage in infancy than at any other period. The most important factor in all these cases was infection of the bronchi, and here there was a constant reinfection. But not all cases of bronchitis and pneumonia proceeded to bronchiectasis. The pathology of bronchiectasis pointed to a hope of relief of symptoms, probably to cure if adequate treatment was begun at an early stage. In the chronic stage the only hope lay in removing or destroying the diseased area. Most cases occurred

among children of the poorer classes who had bad homes: there was a great need of more convalescent homes in the country to which these children could be sent. In Switzerland very good results followed short residential treatment and the recognition of the causal connexion of sinus infection with the upper respiratory tract conditions gave real hope for a tangible lowering of the incidence of these diseases in young children.

The Ear, Nose, and Throat in Children's Diseases

Dr BRANFORD MORGAN (Norwich) said that apart from syphilis and tubercle the common infections arose from the upper respiratory and urinary tracts and the skin: the first named vastly preponderating. A simple rhinopharyngitis might suffice to cause refusal of feeds with vomiting and diarrhoea. Authorities had insisted on the almost constant infection of the ears which resulted from nasopharyngitis in the infant in whom the short and wide Eustachian tube provided an easy path for organisms from throat to ear. He paid particular attention to the relationship between gastro-enteritis and ear infections especially to the question whether the ear infection was due to vomitus spreading up the Eustachian tube. Referring to the modern tendency to refrain from treating acute mastoiditis as a surgical emergency he asked whether by postponing the operation the liability to meningial or intracerebral infections was increased. He had recently seen cases in which meningitis had rapidly followed an aural infection and in which on opening the mastoid comparatively slight disease was found. A number of children brought to hospital because they were constantly catching cold had allergic rhinitis and some had a latent infection of the sinuses: their temperature was raised with headache and a feeling of stuffiness. These symptoms abated when free drainage was instituted.

Tuberculous Ulcerations of Mouth and Pharynx

Mr F C ORMEROD said that when the tonsils and fauces were affected with tuberculous the outlook was always grave and a fatal termination could be expected in two or three months. Tuberculous disease of the tongue however was a more curable disease and the life of the patient with this was considerably longer than with faucial tubercle. When the floor of the mouth, the gums, and lips were involved the outlook was definitely more serious. Of 17,000 cases of ulceration referred to the throat department at Brompton Hospital 12,000 were tuberculous and in the same time there were 3,120 cases of tuberculosis of the larynx, 20 of the tonsil, 32 of the pharynx, 20 of the tongue, 4 of the post-nasal space, 2 of the lips. The age of attack in mouth and pharynx cases was slightly younger than in tubercle of the larynx—namely 20-30 as against 30-40. Tuberculous disease in pharynx and mouth was nearly always a complication of very severe disease in the lung: it could often be taken as a sign that the patient's resistance to tubercle was breaking down. The chief symptom in the pharyngeal cases was the extreme pain, the difficulty in swallowing and the distressing quantity of saliva formed which the patient was constantly feeling the impulse to swallow though it was such a painful process. An exceedingly serious type of lesion was ulceration of the posterior pharyngeal wall. In some cases this extended upward into the post-nasal space and laterally on to the posterior pillar of the fauces so that whatever the patient ate or drank

it was impossible to steer the food clear of an ulcerated area, and unless some remedial measure was carried out death from starvation might take place. In most of these cases the prognosis was very bad. It was useless to attempt to treat these cases as out-patients, they required thoracoplasty, or paralysis of nerve, or artificial pneumothorax, or at least sanatorium treatment. The best local measure was diathermy, carried out under cocaine anaesthesia, in many cases this enabled comfortable swallowing to be carried out for a time.

At the meeting of the section of otology, presided over by Dr DOUGLAS GUTHRIE, a paper on some

Problems of Aural Medicine

by Dr MYGIND and Dr DIDA DEDERDING was read by the former. The treatment of the non surgical diseases of the ear, he said, had not got far beyond the catheterisation of the Eustachian tube of 200 years ago. This was possibly due to the dramatic evolution of aural surgery, but perhaps in part, too, to an erroneous conception of the localisation and nature of a series of non suppurative ear diseases. The usual interpretation of the findings from acoustic tests needed revision. Perception deafness was characterised by a lowering of the upper limit, but only if there was a lowering by bone conduction as well as by air. Hearing of the high-pitched whispered voice was more severely impaired than the hearing of the low-pitched conversational voice. On the other hand, sound conducting deafness was characterised, in the first place, by an elevation of the lower limit, the upper limit in the less severe cases being preserved. The double testing of upper limit of hearing by air and by bone became the best method of distinguishing between a sound conducting and a sound perceiving affection. In 721 cases 89 per cent had a sound-conducting affection, 3 per cent were defective in sound perception, and in 8 per cent there was a combination of the two. His colleague's and his own investigations had shown no sharp line of separation between affections of middle ear and those of the labyrinth. On examining cases of so-called neuro-labyrinthitis the cochlear nerve was found to be intact, the labyrinth was affected, as shown by vestibular signs and frequent tinnitus, but the lesion was localised peripherally to the perceiving organ itself, the middle ear was also involved. Many cases of apparently ordinary tubal stenosis or middle ear catarrh were accompanied by labyrinthine symptoms, not only tinnitus, but also vertigo and nystagmus. He was convinced that both

in Mérière's disease and many other sound conducting affections one was dealing with a disturbance of the vascular function, especially in the capillaries. As a result there was a hydropic swelling of the inadequately nourished cells. If such a patient were dehydrated, either by excessive perspiration, or by diuretics, his hearing would be found to improve. The ear was often found to be the site of a morning oedema, which wore off during the day's activities. The object of the paper was to present an explanation based on clinical, anatomical, and physiological phenomena for conditions found not only in the ear but in all parts of the body, the prime causal agent being vascular. The object to aim at in treatment was to tram by stimulation the capillaries of skin, muscles, and lungs to a higher capacity.

Dr PHYLIS KERRIDGE read a paper and gave gramophone demonstrations on

Hearing and Speech in Deaf Children

She had been instrumental in testing the hearing of 500 children in schools for the deaf in London by means of the pure tone audiometer, and in some cases by other means also, so that methods could be compared. This capacity or incapacity was correlated with the intelligence, the age, and other factors. As a result it was estimated that three fourths of the children in schools for the deaf would benefit from the use of suitable sound magnification instruments. The hearing power of the children by air and by bone conduction was tested at eight pitches, and the results correlated with the medical history and the degree of speech proficiency.

Mr HAMBLETON THOMAS, in a paper on the

Physical Aspects of Tinnitus

defined tinnitus as the response of the auditory part of the 8th nerve to abnormal stimuli. The causes of this were many, and little accurate information was available as to what they were. Causes could be classed as either extrinsic (arising outside the ear) or intrinsic. The former included muscle movements outside, and sounds coming through the Eustachian tube. Intrinsic causes included vascular conditions and hyperaesthesia of the 8th nerve, and perhaps the abnormal action of currents. Whatever might be discovered in respect of physical causes of tinnitus was likely to be of help in these distressing cases, which were sometimes so severe that the patients committed or attempted suicide.

During Friday afternoon some twenty cases were inspected and discussed, and in the evening members dined together.

NEW INVENTIONS

AN IMPROVED AND INEXPENSIVE CULTURE BOTTLE FOR THE PREPARATION OF VACCINES

Roux bottles have almost completely replaced other forms of culture bottles when a solid medium is used, particularly in the preparation of vaccines. The ordinary type have, however, a number of disadvantages—

Firstly they are expensive, varying in price from 27s to 35s per dozen. The cheaper varieties rely entirely on the thickness of the glass for their heat resistant properties and in consequence are extremely fragile, they have to be handled with the greatest of care and there is the attendant risk. It has therefore been safer and more economical to use the stouter but more expensive varieties

Secondly the mouth requires to be plugged, and when vaccines are being made on a large scale this occupies much time.

Thirdly, the agar is inclined to slip in the bottles, so it has become customary to incubate them lying flat with the agar lined side downwards and the growing surface of the agar pointing upwards. This is not good practice, for water condenses on the upper and inner wall of the bottle in large drops which eventually fall on the surface of the agar below. The constant drip damages the surface of the agar and results in some agar being retained in the suspension when the growth is eventually washed off. This can be avoided to some extent by giving the bottles a slope while they are being incubated, but even so slipping of the agar is likely to occur. The retention of even small quantities of agar in the finished vaccine is in my opinion one of the most potent causes of those severe reactions to T & B C vaccine that are occasionally experienced.

It was considered therefore that some sort of screw cap bottle might be used with advantage. To have such a bottle made was out of the question as the cost would have been prohibitive. Accordingly experiments were made with various types of bottles available commercially. Of those tried a bottle made by the United Glass Bottle Manufacturing Co. London and catalogued by them as bowl panel 32 oz. was found to be very satisfactory and the cost is only 4s. per gross.



This bottle measures 8½ in. from bottom to shoulder is 4 in. wide and 1½ in. deep. The bottom is flat externally and has a low convex surface internally. One side of the bottle is flat and the other low concave-convex from within outwards. On the flat side externally there is an oblong depressed area which corresponds to a raised area on its internal surface. This peculiarly indented panel together with the convex internal surface of the bottom holds the agar firmly after it has set. The neck of the bottle is 1½ in. long and the mouth has an internal diameter of 1 in. which is covered with an aluminium screw cap. As supplied by the manufacturers this cap is fitted with a cork and grease paper washer.

The whole bottle is constructed stoutly of clear glass through which any medium inside the bottle and the characteristics of any growth on such can be easily seen. The figure shows the internal and external characteristics.

METHOD OF USE

The cork and grease paper washer must be removed from the aluminium cap and replaced by one of rubber. The bottle is thoroughly washed with soft soap solution, rinsed with tap water then with distilled water and sterilised in the autoclave at 120° C. for 1 hour. While being sterilised the screw cap is in position but not screwed.

tight. After sterilisation 130 c.c.m. of sterile agar is poured into the bottle and autoclaved at 115° C. for 20 minutes. The bottle is then laid on the bench flat side downwards on an incline of about 3° so as to give the agar a slight slope from the bottom towards the neck and the cap is screwed down tight. The screw cap with its rubber washer prevents any evaporation of the water of condensation &c. and media can be stored ready for use in these bottles for short periods without fear of deterioration from this cause. After the agar has set each bottle is incubated for 24 hours at 37° C. as a test for sterility. While being incubated they are placed in the incubator so that the flat agar-lined side is uppermost. The surface of the agar is available for growth in these bottles is equivalent to four fifths of that obtained in a Roux bottle of 1000 c.c.m. capacity. By using a two way metal screw cap fitting similar to that employed by McCartney¹ by means of which air can be withdrawn and replaced by CO₂ or any other gas that may be desired, these bottles can be adapted for the culture of micro-aerophilic organisms &c.

These bottles have certain disadvantages. They are heavy and they cannot be sterilised in the hot air oven. It might be thought that the airtight fitting screw cap would lead to such a deficiency of oxygen in the bottle in the presence of rapidly growing aerobic organisms that a poorer growth of these organisms would result. It was found that in actual practice where only 24 hour cultures are used for vaccines, this was not the case and indeed heavier suspensions were obtained per square cm. of growing surface than from the Roux bottle. These bottles have been put through an extensive trial at the Medical School Royal Naval College Greenwich and have been employed in the preparation of 70 000 c.c.m. of T.A.B.C. vaccine. During this period 420 of these bottles were used and in no instance was trouble experienced with slipped agar. These bottles can be obtained fitted with aluminium caps and rubber washers ready for use from A. Gallenkamp and Co. Ltd. London.

S. G. RAINSFORD, M.D. Dubl.
Surgeon-Commander R.N.

¹ McCartney J. E. (1935) *Lancet* 2 1476.

REVIEWS AND NOTICES OF BOOKS

A Manual of Radiological Diagnosis

By IVAN C. C. TCHAPEROFF, M.A. M.D. D.M.R.E.
Camb. Assistant Radiologist and Radium Registrar
St. Thomas's Hospital, London. Cambridge
W. Heffer and Sons, 1937. Pp. 250. 21s.

In this book Dr. Tchaperoff has attempted with considerable success to set out clearly the typical radiological appearance of any disease so that rapid reference can be made to it. The work will thus be useful not only to the student preparing for examination but to the busy radiologist wishing to refresh his knowledge of a particular lesion. In the scope afforded by 250 pages the reader will not expect to find full descriptions of the rarer abnormalities, but he must be prepared for certain omissions of more consequence. Fractures are only very briefly considered; there are only two lipiodol pictures of the chest and no arteriograms. It is disappointing also to find no pictures of ulcer deformities of the duodenum and in the last chapter (3 pages) on tumours of the spinal cord and ventricles only one abnormal ventriculogram.

The work is well planned. In the introductory chapters the author refers to several technical points which will help the inexperienced reader to interpret films. In each section of the book a description of the normal appearances precedes discussion of

the various pathological appearances recognised also by X-ray examination. The differential diagnosis is outlined with the description of the lesion. Each section is freely illustrated and the abnormalities in the radiograms are clearly demonstrated by numbers. The book is a practical addition to radiological literature.

The Morphine Habit and Its Painless Treatment

Second edition. By G. LAUGHTON SCOTT, M.R.C.S.
B.A. Oxon., late Senior Physician, London Neurological Clinic, late Chief Assistant, Guy's Hospital.
Neurological Department, London. H. K. Lewis and Co. 1937. 1p. 10s. 6s.

Dr. Laughton Scott's method of treatment of morphine addiction consists of covering the gradual withdrawal of the drug by means of increasing doses of belladonna. In this second edition of his book he has introduced a brief discussion on the physiology of this method of treatment. He points out that the effect of morphine upon the addict is to stimulate the vagus, while its narcotic action tends to disappear. Consequently a shortage of supplies of the drug means the diminution of vagal control and sympathetic overaction. The physiological effect of treatment therefore is to reverse the disturbance

of autonomic balance by increasing doses of bella donna, a drug which, given in this way, exercises a stimulating, instead of its usual depressing, effect upon the vagus. Dr Scott describes his technique in detail, particularly emphasising the importance of careful management during convalescence, which is essential to prevent relapse. He contrasts the absence of shock associated with this method, which has given excellent results in his hands, with the effect of older and more drastic methods. He does not, however, describe treatment with insulin, which is employed with a similar effect upon autonomic balance, nor the use of the drug "rosum" for which good results have been claimed, especially in the United States. This book will undoubtedly be useful to those faced with the difficult task of treating morphine addiction.

When Temperaments Clash

By MURDO MACKENZIE, M.D., M.R.C.P., Physician for Psychological Medicine, St John's Hospital, Lewisham, and the Wilson Hospital, Mitcham. London: Thos Murby and Co. 1937. Pp. 227. 7s. 6d.

This small book deals in a non technical manner with the subject of "nerves" and seeks to describe the symptoms and to explain the causes of this modern curse. The early chapters contain an account of neuronic instability and the resulting "anxiety-apathy cycle," with examples drawn from everyday experience. Later Dr Mackenzie discusses in detail the fundamental components of temperament, pace, and sense of value, and holds that everyone is by natural bias a craftsman, an advertiser, a dealer, or an administrator according to whether his pace is deliberate or immediate and his sense of value one of simplification or of amplification. Neuronic instability results when the individual's natural bias, through ignorance or compulsion, is prevented from acting freely and is used in defence instead of for progress, and when, instead of co-operating with the opposite temperaments with which he comes in contact, he clashes with them. To make the most of his natural bias, the individual must consciously or unconsciously know what it is and must be able to release it to the full.

The book is presumably intended mainly for the layman and probably for this reason Dr Mackenzie is inclined to repeat his arguments and to multiply his instances to what may seem an unnecessary extent, perhaps thereby showing that his natural bias is towards amplification rather than towards simplification, but apart from this defect, the medical reader will find much of interest and value in its explanation of common problems.

Latent Syphilis

And the Autonomic Nervous System. Second edition. By GRIFFITH EVANS, D.M. Oxon, F.R.C.S., D.O.M.S., formerly Hon Surgeon, Caernarvonshire and Anglesey Infirmary. Bristol: John Wright and Sons. 1937. Pp. 158. 7s. 6d.

Mr Griffith Evans's work is based upon the belief that the diagnosis of syphilis ought not to be restricted to those cases which satisfy one of the three customary criteria—namely (1) the Wassermann test, (2) demonstration of spirochaetes, (3) gross pathologic lesions. It is not altogether clear what are his further diagnostic criteria, but his views on the importance of syphilis in the etiology of many disorders are indicated in a table which shows that

syphilis is responsible for 27 per cent of cases of "blanching of the extremities," over 30 per cent of cases of diseases of the thyroid and of asthma, 63 per cent of cases of "congestion of the extremities," and 100 per cent of (six) cases of purpura. Syphilis appears also, in his view, to be an important cause of "the chronic abdomen" and of cancer. Osler once said that if you know syphilis, you know clinical medicine. Mr Evans seems to regard the two as identical.

Canning Practice and Control

By OSMAN JONES, F.I.C., Chief Chemist, C and T Harris (Calne) Ltd., and T. W. JONES, B.Sc., Editor the *Industrial Chemist* and *Food*. London: Chapman and Hall. 1937. Pp. 254. 25s.

CANNING in this book is limited to foodstuffs put up in metal containers. In their preface the authors describe it as a bench book and their aim is to make it of practical value to the canner. In this object they have succeeded, but a large part of the book is a technical treatise which will appeal also to the works chemist. About 87 pages deal with factory and mechanical questions while more purely laboratory matters occupy about 131 pages.

On the practical factory side the authors deal very comprehensively with their subject. The chapter on the cannery and its equipment is a good illustration of its quality. This chapter deals, amongst other things, with single versus multi storeys, the position of the factory, and the mechanical equipment. The location in country or town depends a good deal upon the nature of the food to be canned. The requirements of each type of food canned are considered separately. Such important matters as the type and size of can, the nature of the tinplate, and the use of lacquer are discussed. The important question of lacquer might have received more comprehensive treatment with advantage. Rather more space might have been devoted to the life of canned foods. On the other hand an excellent account is given of "hydrogen swell." Cannery waste and cannery hygiene are treated in separate chapters. The effect of canning upon nutritive values is discussed in rather a tentative way, as the authors point out our knowledge on this aspect of the subject is still far from complete.

The chemical, bacteriological, and microbiological aspects are dealt with in considerable detail. Indeed some questions, such as the ordinary chemical examination methods for water, might have been omitted with advantage as they are so fully described in the ordinary text books on the subject. The more technical matters which specially apply to canned foods, such as testing for leaks, tinplate examination, metallic contamination, and the detailed examination of the raw food products, are all adequately considered. On the bacteriological side the authors do not seem quite decided as to the significance of aerobic spore contamination and in holding that these are causes of spoilage hold views not in accord with those of most bacteriologists. The treatment of *B. botulinus* in relation to canned foods omits much of value and in view of its great importance should have received much ampler treatment.

On the whole the volume is likely to be of great practical utility and should help to make canning a less empirical and a more scientific procedure. It should be of material service both to the food canner and to the technical experts associated with the manufacturer.

THE LANCET

LONDON SATURDAY JUNE 26 1937

THE GENERAL REGISTER OFFICE, 1837-1937

IN the publicity attending the centenary of the General Register Office much has been heard of marriage registers something of census taking and a little a very little of medical statistics. In this office our thoughts turn naturally to the romance of medical statistics rather than to that of the Fleet and Mint registers of marriages (now we understand in the custody of the General Register Office) because had it not been for the founder of THE LANCET we might not now be celebrating a medical-statistical centenary. On June 29th 1839 we published a leading article on the first report of the Registrar General. Its writer said:

'Magendie has starved rabbits poisoned dogs cut their nerves drained their veins and investigated the effects of reagents upon their blood—thousands of frogs and cats sparrows chickens and mice geese pigeons and turtles have been sacrificed not cruelly—not to gratify carnivorous propensities—not to seek superstitious indications—but in the hope of surprising the mysteries and laws of vitality. The Lecturer of the College of France in the plenitude of his zeal would however never think of rendering men the subjects of his experimental crucifixions. But continues the writer, 'in the present state of society are not the experiments from which the physiologist would shrink—and which he would not dare to name or which he would not think of proposing performed upon a large scale? What variety of occupation and exercise can the experimentalist require that is not practised upon the hills and the plains in the factories and the potteries under the earth and on the seas? And must it be that because we can only observe these phenomena and cannot experiment that they are to be neglected? One sees to what this is tending and how it must have rejoiced the heart of young Mr FARR. Indeed as there are two Latin quotations a reference to augurs and to men of such widely different celebrity as MAGENDIE and UNIC one might even conjecture that—but we need not do so. Anyhow the founder of THE LANCET believed in Farr and said in the very next issue. The pages of this Journal have frequently been enriched by statistical contributions of Mr Farr and we feel much pleasure in recording our approbation of the article now before us which cannot fail to lay a lasting foundation of honour for its learned author.

Indeed we may fairly look upon Farr's career with some parental pride. In our columns he commenced author we rejoiced in his later achievements over the way in which he really did drive home to the sanitarian the lessons to be learned from experiments in the factories and the potteries

the results of which were recorded in the registers. Perhaps we might even claim that Farr's association with journalism served him well. Nicely educated young men of this age who eschew superlatives true blue civil servants whose principles forbid them to come nearer the crudity of 'I think' than is expressed by 'it may perhaps be thought' find Farr a trifle flamboyant. But nobody could find him dull. The belief that medical statistics are dull reading will not we hope survive Dr BRADFORD HILLS's book. Anybody needing further reassurance should turn over Annual Reports of the Registrar General in Farr's time. One of the last of his 'Letters to the Registrar General on the Causes of Death' that for 1876 contains an essay on that topical subject maternal mortality. From the statistical and historical point of view it is profitable reading. In collecting materials for his statistical study Farr had perused the details of individual cases. There was one of a death from flooding due it would seem to the practitioners' negligence. Farr obtained and printed a moving letter from the dead woman's husband. A prudent official would have left it without comment or at most have added 'it is perhaps to be regretted that'. But the old journalist's blood was stirred and he wrote. In recollecting her pale lips and blanched cheeks as she lay the tears rushed to her father's eyes.

In questa forma

Passa la bella donna e par che dorma

Such fearful cases should be judged by the Medical Council.

Farr's genius made medical statistics a science. His training helped him to make others share in human sorrows the events of which were merged into averages. Carefully avoiding a Latin quotation which he would surely have made we will say that Farr was never in any danger of forgetting in statistical analysis the real object of collecting statistics. The work he began has grown so great that whether we like it or not idiosyncracies of expression however charming must be eliminated from official documents. Now it is for the readers not for the compilers of official medical statistics to realise what is behind these scribbled ranks of numbers.

- BLOOD TRANSFUSION

It is now about twenty years since transfusion was established on a sound basis and became an accepted part of medical and surgical routine. No figures are available for the number of transfusions yearly performed in this country but it must run into many thousands and is rapidly increasing. In 1921—the year of its inception—the London Blood Transfusion Service arranged a donor for 1 transfusion. By 1931 the number had risen to 2078 and this year it will probably prove to be more than three times greater. For the country as a whole the increase is probably very similar. But whereas the needs of London have been admirably met by the comprehensive service directed by Mr P. L. OLIVER the provision of donors in other districts has usually had to be

organised by individual hospitals. The work is apt to devolve upon the hospital's pathologist, and any who have to start or control such a service will find valuable ideas in Dr S C DYKE's account of the one established at the Royal Hospital, Wolverhampton, which appears on p 1538. This service was organised for the hospital, and is maintained free of charge to it, by the Wolverhampton Rotary and Round Table Clubs which thus put into effect their motto "service for all". The example has already been followed by other rotary and round table clubs both in this country and abroad and deserves further emulation.

It is a pleasant fact that donors are seldom lacking when urgently required, but even with the most perfect organisation the delivery of blood by donors in their own person entails difficulties and inconvenience, and it would obviously be a great advantage if suitable blood could be stored for use as required. At the Hastings meeting of the Association of Clinical Pathologists, reported on p 1523, various speakers recorded experience pointing to the conclusion that untoward reactions are to be expected after the use for infusion of blood stored under ordinary ice-box conditions for more than a week, but far more information on the subject should soon be available from Russia and from Spain, where stored blood is widely used. Much of the blood used in Spain, apparently with success, is stored under a positive pressure of two atmospheres.¹ Dr J O OLIVER, of St Thomas's Hospital, reported that by bubbling oxygen through stored blood he had been able to keep it in a state suitable for infusion for at least a fortnight, and the question arises whether the oxygen tension may not be the determining factor in the preservation of the blood for infusion. Of more immediate interest to most of us, however, is the continuing possibility of "reactions" after transfusion of fresh blood, leaving aside those due to gross incompatibility. In the past there has been too great a tendency to regard these as necessary evils. In Russia, where transfusion is largely practised, reactions appear to be both frequent and severe. BOGOMOLETZ² attributes them to a mysterious process of "colloidoclasia" in the infused serum, and thinks them more or less inevitable. His paper is largely a statement of this view, which appears to be orthodox in Russia, and a polemic against HESSE and FILATOV, both recent immigrants into the Soviet Union, by whom the reactions are attributed to errors in technique such as chilling of the infused blood, improper preparation of solutions used, and lack of cleanliness in the apparatus. This view is hotly contested by BOGOMOLETZ, but most workers in this country will agree with HESSE and FILATOV. As Dr JANET VAUGHAN pointed out in the course of the discussion at the Hastings meeting, many transfusions are performed very casually. To secure such attention to detail as is required to ensure a perfect technique, Dr DYKE believes that the whole transfusion service of a hospital

should be the responsibility of one person, preferably a senior resident officer, and he reports that since this has been done at the Royal Hospital, Wolverhampton, reactions after transfusion have almost disappeared. It is worth pointing out that the importance of avoiding the chilling of infused blood is now so well recognised that in skirting Scylla some have been dragged into Charybdis. Only a week or two ago Prof S L BAKER recorded in our own columns³ a death following infusion of overheated blood.

The number of transfusions given increases by leaps and bounds, but are they all really required? The general opinion at the Hastings meeting was that they are not, and there can be little doubt that many patients are given blood that would have been far more useful to others. The primary indication for infusion of blood is to replace blood lost by hæmorrhage. Sudden loss of blood, to an extent that will not cause dangerous exsanguination, is often followed by a degree of "shock" and many transfusions are performed for such shock where the actual loss of blood is not serious. It is increasingly clear that such patients, though they need fluid, do well—perhaps better—without transfusion. It is also questionable how far it is useful to transfuse blood in the so called idiopathic anæmias with a view to stimulating the hæmopoietic system, but here at least there is little likelihood of doing harm. Transfusion is likewise often employed in acute and even chronic septic states, and here again its value is doubtful. Finally, it is used by no means seldom because things are desperate and transfusion seems a good sort of thing to do. Clearly there is room for much better definition of its appropriate application.

NEUTRALISING ANTIBODY IN POLIOMYELITIS

THERE is ample evidence that virus infections, whether natural or experimental, call forth specific antibodies just as bacterial diseases do. The relation of these antibodies to immunity has been closely studied and it is generally agreed that in many virus infections, at any rate, they play an important part, the practical application of this is seen in the passive prophylaxis of a disease like measles. It was thought at one time that infection with the virus of poliomyelitis gave rise to the production of specific viricidal antibody which was necessary for combating the infection and preventing reinfection, indeed it was on this assumption that convalescent serum was used in the hope of arresting the infection at an early (preparalytic) stage. The fact that the serum of many adults who have never suffered from poliomyelitis contains antibody has been attributed to subclinical infection, just as the majority of adults, especially in our urban populations, acquire diphtheria antitoxin without having ever had manifest diphtheria, so also they might acquire poliomyelitis antibodies through mild unrecognised attacks of the disease.

¹ See *Lancet* June 5th 1937 p 1359.

² Bogomoletz A. *Journal médical (Acad. des Sciences de la R.S.S. d'Ukraine. Inst. de Physiol. clin.)* 1937, 7, 16.

³ Baker S L. *Lancet*, June 12th 1937 p 1399.

During the past few years however, evidence has been accumulating which suggests that the happenings in poliomyelitis are not in accord with this orthodox belief. The therapeutic use of convalescent serum, despite earlier favourable reports is now looked on with scepticism by the majority. This change of front has been due to the negative clinical results obtained in America by PARK and his colleagues¹ and also to a better understanding of the route by which the virus of poliomyelitis reaches the susceptible cells in the central nervous system. The apparent failure of convalescent serum to affect the course of the disease is not surprising if it is accepted that the virus infects via the olfactory nerves—which it reaches either by way of the olfactory hairs or the olfactory cells—and that its spread thence to the susceptible cells in the central nervous system is axonal for from the very earliest stage of infection the virus is intracellular and therefore protected against specific antibody. The idea that antibody is unimportant in resistance to infection with poliomyelitis virus finds further support in the experimental work of SCHULTZ and GERHARDT² who have shown that the monkey passively immunised and possessing adequate circulating antibody is little less susceptible to infection by the nasal route than the normal animal. Fresh information is now provided in a paper by BRODIE, FISCHER and STILLERMAN,³ recording their observations on the incidence of neutralising antibody in poliomyelitis. They tested for antibody by intracerebral inoculation in monkeys of serum virus mixtures two strains of virus being employed a monkey passage strain and a recently isolated human strain. Their investigations failed to show any relationship between the presence of antibody in the blood and resistance to or recovery from infection. Antibody was found in the acute stage of the disease in 32 out of 114 cases—in 2

of these the serum was obtained in the pre-paralytic stage of the disease—and out of 39 patients with residual paralysis who had had no protective substances in their blood in the acute stage of the disease only 2 developed antibody during 12–16 months observation.

Observations like these reported by BRODIE and his colleagues have been made before by others and it appears that neutralising antibody may be present early in the disease probably before its onset and that infection often fails either to influence the titre of pre-existing antibody or to evoke its production in those in whom it is initially absent. From what has already been said about the route of infection followed by this virus it is understandable that the presence of neutralising antibody should be without much influence either on the incidence or the course of infection. What is rather disturbing is the complete lack of correlation between infection and the development of antibody. As we have said, this is not the first time that the discrepancy has been noted and it has led some workers to doubt the specific nature of the neutralising antibody and to suggest that its development is the outcome of physiological activities.⁴ The problem is of course not confined to poliomyelitis for we are faced with a similar difficulty in the interpretation of the origin and significance of the so-called normal antibodies. Are these the result of infection or is some other mechanism responsible for them? The evidence available does not allow of a definite answer but for the time being it would perhaps be a mistake too readily to abandon the orthodox view. As far as poliomyelitis is concerned might not antibody be merely a by-product of infection the response to that variable amount of virus which gains access to tissues other than those of the central nervous system? This might account for the irregularity of its development. Meanwhile however, we remain in ignorance of the mechanism of immunity to poliomyelitis.

¹ Park, W. H., *Trans. Amer. Phys.* 1932 47, 123.
² Schultz E. W. and Gerhardt L. J. *J. Pediat.* 1936 7, 332.

³ Brodie M., Fischer A. E. and Stillerman M. *J. clin. Invest.* May 1937 p. 417.

⁴ Jungblut C. W., and Engle E. T. *J. Amer. med. Ass.* 1932 99, 601.

ANNOTATIONS

PSEUDO-METHAEMOGLOBIN

ELSEWHERE in this issue in a report on p. 1523 brief mention is made of a paper read by Dr Hamilton Fairley to the Association of Clinical Pathologists describing the occurrence of pseudo methaemoglobin in blackwater fever. Dr Fairley and Dr J. I. Bromfield made a further communication on the same subject to the Royal Society of Tropical Medicine and Hygiene on June 17th. Quite apart from their bearing on blackwater fever the observations now reported appear fundamental to the understanding of haemoglobin metabolism. Like all real advances in science they raise many new and exciting problems.

In 1931 Fairley and Bromfield first noted in the plasma of a patient suffering from blackwater fever a previously unrecognised pigment closely related to methaemoglobin but differing from it. This pigment produced a chocolate coloured blood with a brown plasma; it was absent from washed corpuscles

and did not appear in the urine. Prof David Keilin to whom the pigment was sent regarded it as a modification of methaemoglobin in which the globin portion of the molecule had been altered undergoing some irreversible change. Its spectrum has the general appearance of methaemoglobin but the bands are shifted about 60 Angström units towards the short wave end of the spectrum and it has none of the properties of methaemoglobin when tested with Stokess reagent or ammonium sulphide. Recently Fairley and Bromfield have continued their investigations on a large group of cases of blackwater fever in Macedonia a country which might from their accounts be described as the haematologist's paradise. They found this new pigment which they have named pseudo methaemoglobin constantly present in the plasma in all severe cases of blackwater fever. In the past it has been mistaken for methaemoglobin. It is never found in corpuscles and is apparently formed from oxyhaemoglobin only after its liberation

from the red blood cells. The investigators were able to produce it *in vitro* by incubating solutions of oxyhæmoglobin, methæmoglobin, or sulphæmoglobin at 40°C for 24 hours or longer in the presence of sterile plasma. They believe that it is in no way peculiar to blackwater fever, but will probably be found in the serum in any condition in which there is sudden severe hæmolytic, such as cold hæmoglobinuria, possibly acute hæmolytic anæmias, and in incompatible blood transfusions. It does not appear in the urine. Methæmoglobinuria is common in blackwater fever, but the methæmoglobin is derived from oxyhæmoglobin after it has traversed the glomeruli and does not result from methæmoglobinæmia. It is known that the presence of large amounts of oxyhæmoglobin in the plasma leads to serious renal damage with injury of the renal tubules due to precipitated pigment and consequent anuria and often death. Farley and Bromfield suggest therefore that the conversion of free oxyhæmoglobin into pseudo methæmoglobin is to be regarded as a conservative action on the part of the body, since pseudo methæmoglobin does not itself pass through the kidneys and in its formation reduces the amount of oxyhæmoglobin available to damage these organs. This reaction, they suggest, is the first stage in a hitherto unrecognised mechanism by which the body disposes of circulating extracorporeal blood pigment. Why the cells in blackwater fever are hæmolyzed is still not known. What property or factor in the plasma induces the formation of pseudo methæmoglobin remains to be discovered. Why in some patients oxyhæmoglobin is not converted into the less dangerous pseudo methæmoglobin in sufficient quantity or with sufficient speed to prevent renal damage is also not known. As Farley himself suggested, the recognition of this mechanism opens up the possibility that a drug may be found that will convert oxyhæmoglobin into the more harmless pigment when the body's own processes fail.

Many must have felt as they listened to Dr Farley that he and Dr Bromfield with a company of hæmatologists should pack their bags at once for Macedonia to try to answer some of the questions their work has raised.

COMPATIBLES IN THE MENU

Few doctors in this country can have escaped being asked at some time or another what they think of the Hay diet. The questioner is more often an acquaintance than a patient, and the question casual rather than serious, for the person who intends to follow directions given in his newspaper does not want to hear his regular medical adviser say that these are unreasonable. Dr W. H. Hay and his business associates have shown, if nothing else, that there are a great many people who can readily be persuaded to follow such directions, with suitable assistance one simple idea can be made to go a very long way. Dr Hay's idea—or, as some call it, a bugaboo—is that carbohydrates and proteins should not be eaten at the same meal, because protein (he says) increases the gastric secretion of acid and so hinders the digestion of starch by the saliva. The delayed digestion of carbohydrate is supposed to allow fermentation to take place and the acids (of secretion and fermentation) are absorbed into the circulation, causing almost every known ailment and eventually death. This month Dr Eugene Foldes² of New York has demonstrated how completely experience and

experiment contradict this theory. The amount of hydrochloric acid secreted after taking carbohydrates is not very different from the amount secreted after taking proteins. Even if there were a significant difference an increased amount of hydrochloric acid in the stomach would not wholly interrupt starch digestion, and even if it did so, fermentation in the stomach would not follow. If there were any fermentation it would be in the intestines rather than the stomach, and it would not lead to the production of significant quantities of acid, nor is there any reason to believe that the body would be unable to cope with such acids even if they formed in larger quantities. So far then there is no evidence to substantiate the theory. Against it are the intimate mixture of protein and carbohydrate in many natural foods, the fact that contents of the stomach ferment only where there is achlorhydria, and the comparative harmlessness of "acids" in a ketogenic diet except in one or two well defined conditions like diabetic coma. The chief danger run by followers of the Hay diet is that they may reduce the protein in their daily ration unsuitably.

THE BLOOD AT HIGH ALTITUDES

Krupski and Almasy¹ have been studying the influence of high altitude on the physiology of the blood. The material of their research consisted of two men aged 45 and 33, two women both aged 25, a bull calf aged 4 months, and a goat aged 6 years. These spent 83 days at Zurich, 19 days on the Jungfrauoch (11,200 feet), and 27 days again at Zurich. Like other workers, Krupski and Almasy found that the rise in altitude brought an increase in the red blood cells, not exceeding 15 per cent. The maximum increase for the four volunteers and the goat was in the second and third week, for the calf it was in the first week. The human beings also showed individual differences. On going down into the valley the red cell counts returned to normal. The reticulocyte count increased during the first week's residence at high altitude and diminished during the second week. An important fact was that the maximum amount of hæmoglobin in all four persons was reached during the second week they remained at a height—that is, at a time when the reticulocyte count had already decreased. In the calf and the goat no reticulocytes were observed in any of the three periods, but this is not interpreted as meaning that there was no increase in bone marrow activity. The number of leucocytes was hardly changed at a high altitude, but a decrease of lymphocytes was noteworthy and all investigators are agreed on an increase of neutrophils, such as Hartmann discovered at over 10,000 feet in the Himalayas. The Jungfrauoch counts showed neutrophil lymphocyte ratios different from those described by Hartmann at the same altitude. At the high altitude the calf and the goat had no diminution of lymphocytes, but a relative increase of neutrophils. (A high lymphocyte count is normal in goats and cattle.) A slight increase of monocytes was noticed in three of the human beings and the two animals. During the residence on the Jungfrauoch hardly any deviation from the normal was apparent in eosinophils and basophils. This corresponds with Hartmann's observations. Serum of both the animals showed a negative bilirubin reaction (Ehrlich-Proschner) not only in the valley but also at a height and even after considerable reduction of the erythrocyte count in the third period.

² *Hugana* August 1936 p. 683.
¹ *Acta Gastroenterol.* June 1937 p. 120.

¹ Krupski A. and Almasy, F. *Helv. med. Acta* February, 1937 p. 94.

at Zurich. Determination of the dry substance of the plasma showed that the changes in the red blood-cell count are seldom due to loss of water from the plasma.

The comparison of oxygen capacity with carbon monoxide capacity of normal blood used for the determination of hemoglobin showed agreement. The oxygen capacity is normally proportionate to the red blood-cell count, any deviation from this being expressed in the average oxygen capacity per erythrocyte (SKE=Sauerstoffkapazität pro Erythrozyt). In the valley when the red blood-cell count was raised SKE diminished and vice versa on the Jungfrauoch when the red cells rose SKE rose too. The influence of intensive walking exercise at medium and at high altitudes was investigated on three occasions in one individual. The number of leucocytes was much increased on two of the expeditions and on the third remained unaltered. It is to be noted that there was a decrease of lymphocytes and an increase of neutrophils. On the third expedition after 14 days at high altitude and five hours strenuous exercise there was no definite increase of reticulocytes.

Authorities do not agree about the effects of the altitude on the oxyhemoglobin absorption bands seen in spectroscopy of the blood but during residence on the Jungfrauoch the oxyhemoglobin absorption bands almost always showed an increase both in humans and in animals.

MEDICAL PROTECTION

THERE should be no need to harp upon the advisability of joining a professional defence society. Membership has become particularly important since the passing of the Law Reform (Miscellaneous Provisions) Act of 1934 whereby the estate of a deceased person may now be made liable to claims based on some act or fault during his life time. Whether or not the sponsors of this so-called law reform intended merely to give a remedy to the victims of fatal accidents in "running down" actions the recent case of *Rubra v. Connolly* has shown that the widow of a doctor may be adjudged liable to pay heavy damages out of his estate for some alleged default by her dead husband in the course of his practice. The medical defence societies have consequently been extending their benefits so as to give the personal representatives of a deceased member all such privileges as would have been available if the member were still alive.

The report of the London and Counties Medical Protection Society presented at the annual meeting on June 10th rightly draws attention to this new risk of practice. In addition it repeats much salutary advice of a general kind. Members in their own interests should refer matters immediately to the society before dealing with them in any other way. Not for the first time the practitioner is urged to secure X-ray examination in all cases of injury which may have caused fracture or dislocation or to provide proof that X-ray examination was advised but refused. He should also be as careful as it may be to keep accurate records of all work done for individual patients at the time when treatment is carried out. This advice applies even to dental practitioners who see a great patient of whom they have no knowledge. A defence society can be seriously embarrassed in the task of defending a dental member through want of accurate entries in his dental charts. Many a panel doctor would have been saved anxiety if he had made systematic entries on his record cards, especially entries of visits to patients. It is not mental anxiety alone that the incalculable risks of litigation inflict. Financial loss is also involved.

Reports of a defence society's operations, describing legal action taken to check or defeat some claim against a professional man frequently have occasion to record that the claimant was a person without means and that it was useless to attempt to recover the costs. When a society takes up a case, it pays all the costs of its member whether he be plaintiff or defendant and whether he succeeds or not. If the society recovers damages for a member he receives them without deduction. Societies can offer these advantages because members' subscriptions make them possible. The bigger the membership the greater its resources for mutual protection.

ALLERGY AND NEPHRITIS

REFERENCE was made in these columns a year ago¹ to the experimental production of a glomerulonephritis histologically similar to Bright's disease in man by the injection of heteronephrotoxins. This work, originally brought into prominence by Matsugi, was confirmed in Edinburgh by Arnott Kellar and Matthew using rabbits. The method they adopted in brief was to subject rabbits to a series of intravenous injections of duck's serum the ducks having previously received numerous intraperitoneal injections of a suspension of rabbit kidneys. The rabbits so treated showed a glomerulonephritis closely comparable to human Bright's disease. The experimental facts may now be taken as established but the mechanism of causation remains doubtful. Most observers seem to agree that the nephritis is an allergic manifestation but this statement leaves us in some doubt as to what actually takes place in the body. Amongst points awaiting clarification are the following. First we need to know whether the nephrotoxin is specific for the kidney or whether comparable effects can be produced by sera prepared from other organs. Klinge and Knepper consider that it is only one of several factors required to induce sensitisation and is not specific. Next it has been suggested that the effect on the kidney is due to a haemolysin evoked by blood included during the preparation of the serum. But Arnott Kellar and Matthew perfused the kidneys of their rabbits with saline to remove blood, if therefore appears that a haemolysin can be excluded in their experimental nephritis. Other workers however state that when perfused organs are used a tubular degeneration only is induced by the prepared serum. Lastly it is claimed by Knepper that the so-called localisation of allergic response can be observed after the use of mechanical, thermal, pharmacological, and hormonal factors.

A theory deserving close attention is that advanced by C. E. Kellitt² who suggests that the mechanism involved in this experimental nephritis is that of reversed anaphylaxis. By this as he has explained in an earlier paper³ it is understood that the anaphylactic reaction ensues when circulating antibody unites with antigen which is fixed to the cell—in contrast to the usual type of reaction in which the antibody is fixed to the cell and the antigen is in the circulation. Kellitt thinks that the procedure involved in the experimental nephritis under consideration closely mimics the mechanism of reversed anaphylaxis. Glomerulonephritis in man he suggests may result from a reaction between antibodies elaborated by the body in response to an infection and the toxins resulting from that infection which have become fixed to the tissues more particularly

¹ *Lancet* 1936 1 118.

² *Ibid.* 1936 2 1272.

³ *J. Path. & Bact.* 1935 41 19.

the kidney which is concerned in their elimination. While this hypothesis is as yet unsubstantiated it is of interest that Kellett finds² a sharp fall in the complement in a small series of cases of acute Bright's disease, suggesting that an extensive antigen antibody reaction has taken place. No comparable fall was found in a control series, including cases of chronic nephritis. The whole subject of experimental nephritis and so called "nephropathy" has recently been ably reviewed by H. Horn.⁴ His comment upon the production of nephritis by parenteral injections of proteins and nephrotoxins is as follows—

"Repeated parenteral injections of protein have been shown to produce marked glomerular and tubular changes and occasionally to result in the reactivation of the mesenchymal elements of the interstitial tissue. The results with isonephrotoxins and autonephrotoxins have been inconclusive. With heteronephrotoxins on the other hand, marked abnormalities of the renal structural units have been obtained, their distribution and intensity varying with the dose of the injected material. The significance, however, of the hemolytic factor which seems to be common to all serums employed in these experiments has not been definitely shown. In spite of this, the pictures described indicate that the presence of a state of hypersensitivity is largely responsible for the appearance of the more widespread changes and seems to substantiate further the contention that tissue allergy is essential for the production of a diffuse non suppurative renal lesion."

CHEMOTHERAPY OF STREPTOCOCCAL INFECTIONS

EVERY week now sees fresh developments in the chemotherapy of streptococcal and other bacterial infections, and the situation is becoming increasingly complex in two distinct ways. In the first place, the supremacy of sulphanilamide, which is the active derivative of the original Prontosil and has superseded it in therapeutics, is now being challenged by other related compounds, and on present information it seems scarcely possible to assess their relative merits even in streptococcal infections alone, while their wider potentialities at least in the clinical field, are almost completely unknown. Dr G. A. H. Buttle and his colleagues reported in our issue of June 5th some preliminary observations on two new compounds, diammosulphone and diminosulphone, the efficacy of which in relation to their toxicity is greater than that of sulphanilamide, at least in experimental infections in mice. Another compound, *p*-benzyl aminobenzenesulphonamide, marketed in this country under the name of Proseptasine, entered the therapeutic field some time ago with less experimental backing than that which has accumulated in connexion with sulphanilamide, and the results reported by Dr L. E. H. Whitby (*p* 1517) in this issue are accordingly welcome as confirmation of its experimentally demonstrable efficacy. The chief advantage of this compound is that it is decidedly less toxic than sulphanilamide, at least as measured by determining the maximum tolerated dose in animals. Favourable clinical reports on it have appeared in France. Bloch, Michel, Conte, and Durel,⁵ for instance, treated 180 cases of erysipelas with excellent results. Let it not be supposed, however, that these are the only compounds related to sulphanilamide with which experimental and clinical research will have shortly to deal for other reports are already appearing in which freshly synthesised compounds of this nature are mentioned as yielding promising initial results.

A greater variety of infections are also being treated. While the hemolytic streptococcus is still the outstanding organism of proven susceptibility, experimental evidence justifies the adoption of this treatment in meningococcal meningitis, although clinical reports on its effect are still scanty, and in mouse infections there has been experimental success with bacteria of the enteric group and with the pneumococcus. According to Branham and Rosenthal,⁶ the combined use of sulphanilamide and serum is more effective than either alone in pneumococcal and meningococcal infections in mice. We also noted last week a paper by Dees and Colston of Baltimore, describing a degree of success in the treatment of gonorrhoea with sulphanilamide that has evidently impressed and perhaps surprised these authors themselves. There are thus three genera of bacteria—streptococcus, bacterium, and neisseria—which include one or more species susceptible to the action of these drugs, and it is not unlikely that others will be included shortly.

The Council on Pharmacy and Chemistry of the American Medical Association has now published a report⁷ briefly setting forth the steps by which the present position has been reached and approving sulphanilamide "for inclusion in New and Non official Remedies as a therapeutic agent for the treatment of infections by hemolytic streptococci of Lancefield's serologic group A." This report also adopts "sulfanilamide" as the non proprietary name for *p*-aminobenzenesulphonamide, and deprecates the coming of a variety of proprietary names for it. The Council finally announces its intention to "proceed with determining the acceptability of the various brands that have been submitted." This is likely to be no small task, and if the scope of the inquiry comes to embrace other related compounds it will strain the resources of the greatest medical organisation of the world to their utmost. That there is no official organisation in this country capable of conducting such an inquiry on the scale which may shortly be necessary makes us dependent on the work of individual observers, but they can at all events claim a very large measure of success in advancing this research within the past year.

A COMFORTABLE CURE OF THE OPIUM HABIT

WHATEVER adjectives their exponents may have applied to the various methods of treating opium addiction, it is doubtful whether any but the leucithin diet method has been described as comfortable. Wen-Chao Ma and his colleagues,⁸ who treated a number of Chinese opium smokers in this way and applied to it this epithet, found that, even when the patients remained at home without restrictions, the majority lost their desire for the drug in the course of a few days. The method, being both simple and inexpensive, was clearly worthy of further trial, and such has now been accorded it at the Carmichael Hospital for Tropical Diseases at Calcutta by R. N. and G. S. Chopra.⁹ They treated in all 200 patients varying in age from twenty to seventy years, 80 in hospital and 120 in the out-patient department, 2 being opium smokers, 1 a morphine addict, and the remainder taking opium by the mouth. Before starting on the special diet a careful history was taken and each patient had a thorough physical

⁶ Branham, S. E., and Rosenthal, S. M. *Publ. Hlth. Rep. Wash.* May 28th 1937.

⁷ *J. Amer. med. Ass.* May 29th 1937, p. 1887.

⁸ Ma, W. C., Ni, Y. I., and Rao, H. C. *Far East. Ass. Trop. Med. Trans. (Ninth Congress)* 1934, vol. II, p. 351.

⁹ Chopra, R. N., and Chopra, G. S., *Indian med. Gaz.* May 1937, p. 263.

⁴ *Arch. Path.* 1937, 23, 121, 241.
⁵ *Ann. Méd.* January, 1937, p. 62.

examination any septic or toxic foci found being dealt with during the period of observation following treatment. In order to reduce withdrawal symptoms to a minimum it was found best to give lecithin and glucose on the day before the opium was to be completely withdrawn. One pill containing 10 grains of lecithin (Ovo Lecithin, Merck) was given three times a day usually for the first five days and 25 c cm of 25 per cent. glucose was given intravenously each morning for the first three or four days, glucose then being continued by the mouth. The diet otherwise consisted of fluids only for the first two or three days, light solids rich in protein and lecithin being added later when these could be taken. Usually no treatment was required after a week but in patients were kept under observation in hospital for 10-20 days and later they were seen as out-patients for 1-3 months or longer while they were accustoming themselves to a drug-free existence. During the withdrawal period especially on the first day most of the addicts suffered more or less from pains in the body and limbs, nausea and vomiting, constipation or diarrhoea, cardiovascular and vasomotor disturbances, spermatorrhoea, insomnia or anorexia, which required symptomatic treatment, the severity of these symptoms depending largely on the mental condition. The younger addicts and those who had not acquired a high tolerance showed as might be expected the best results, and of the entire series 70 per cent were completely cured and a further 10 per cent were able to reduce their dosage by four-fifths. In only 2.5 per cent was there complete failure and only 2.5 per cent relapsed within six months of discharge. It was concluded that the lecithin and glucose considerably reduced the risk, intensity and duration of the withdrawal symptoms and the method appears suitable for mass treatment and one which can be tried in the addict's house if his faithful co-operation is ensured.

MAGNESIUM AND VASCULAR SPASM

EVIDENCE that spasm of the terminal arterioles is concerned in a number of human diseases—particularly in nephritis—has been accumulating steadily. If only the physician had at his disposal means of checking such spasm, it is evident that considerable therapeutic advances might become possible. In this connexion some experiments by Rubin and Rapoport¹ deserve attention. It is well known that ergotamine tartrate by causing intense vasoconstriction can produce gangrene of the rats' tail. Rubin and Rapoport found that this gangrene is preceded and accompanied by a rise in systolic blood pressure. This is almost certainly a manifestation of generalised vasoconstriction, and the rat treated with ergotamine is therefore a useful test animal for studying the effect of various factors on vascular spasm. The investigators having previously shown that the magnesium ion is capable of preventing the contraction of plain muscle both *in vivo* and *in vitro* decided to study its effect on ergotamine hypertension. A group of rats were accordingly fed on a diet containing 2 per cent of magnesium carbonate, a proportion too small to cause diarrhoea. After three weeks the blood pressures were measured and subcutaneous injections of ergotamine tartrate were given. The blood pressure remained within normal limits although control rats which received similar treatment but no magnesium developed gross hypertension. Magnesium did not however protect the

animal from gangrene of the tail. In further experiments it was found that animals protected by magnesium developed hypertension when the latter was withdrawn, and conversely that established hypertension in control rats could be corrected by adding magnesium to the diet. It seems fairly certain that magnesium exerts its effect by relaxing the peripheral vessels and the question arises whether the spasm of human disease is likely to respond to such simple measures. Magnesium salts have of course been used by physicians for centuries and it seems incredible that dramatic reductions of blood pressure of the order of those observed by Rubin and Rapoport could have been overlooked. On the other hand the human alimentary tract does not absorb magnesium very easily and it is possible that parenteral administration might be more useful.

MR J G KETCHEN

THE Hospital for Sick Children, Great Ormond-street, has lost a good friend by the death on May 15th of John Gavin Ketchen in his eightieth year. In early life he was representative in London of several important provincial newspapers and knew many of the great Victorian statesmen and men of letters. He was fond of travel and became a fellow of the Royal Geographical Society. But in later years it was in the philanthropic world that he was best known for his sympathetic personality and his courtesy made him a formidable beggar for good causes and he was responsible for collecting the large sum of £500,000 for the Earl Roberts Memorial with which he was associated. In 1923 he became financial secretary at Great Ormond-street and shortly after his appointment he was able to obtain the support of the Prudential Assurance Company for a research department lately instituted there. He also interested the late Mr Bernhard Baron and the late Sir Basil Zaharoff in the work of the hospital and it benefited much thereby. In his appeal work he was greatly helped for many years by his daughter; but he was well aware of the importance of a personal approach and he would often work until midnight writing letters with his own hand which rarely failed to persuade his correspondents that it is more blessed to give than to receive. Late in life he became a Freemason and achieved the rare—perhaps unique—distinction of becoming Master of his mother lodge at the advanced age of 78.

On Thursday July 8th at 3 P.M. Queen Mary will open the new medical block of St Bartholomew's Hospital. It is to be called the King George V building.

THE third annual exhibition of the Medical Art Society will be held at the Royal Society of Medicine during the first fortnight in July. It will be open at noon each day (except Saturday) from Thursday July 1st to Wednesday July 14th. Admission is free without ticket.

THE out-patient arrangements committee of King Edward's Hospital Fund for London have this week issued a memorandum on Time-saving Methods in connexion with Arrival and Registration of Out-patients. The committee, over whom Dr H. Morley Fletcher presides, say that much has been done to shorten the interval between the patient's arrival and his interview with the doctor, but they have many suggestions to offer for further improvement. The report may be had from Geo. Barber and Son Ltd, Farnival-street F.C.4 at 11d. post free.

¹ Rubin M I and Rapoport, M., *Arch. Intern. Med.* April 1937, p. 714.

SPECIAL ARTICLES

THE ORGANISATION OF A VOLUNTARY HOSPITAL BLOOD TRANSFUSION SERVICE *

B1 S C DYKE, D.M., F.R.C.P.

PATHOLOGIST AND DIRECTOR OF THE BLOOD TRANSFUSION
SERVICE THE ROYAL HOSPITAL, WOLVERHAMPTON

A READILY available supply of blood for the purposes of transfusion is a necessity for every hospital of any size. Beyond the technical difficulties of withdrawing and storing it in a sterile state there appears to be nothing against the establishment of depôts of bottled or canned blood, but to solve these difficulties will involve considerable labour and expense and until they are solved hospitals must depend upon blood brought to them by donors on the hoof. Thus demands a corps of readily available donors and the means of getting them when required to the hospital in the shortest possible time.

In London the requirements of the hospitals are met by the London Blood Transfusion Service. In some large towns the British Red Cross has taken on the organisation of blood transfusion services. In most places the establishment and maintenance of the hospital blood transfusion service will fall upon that officer of the hospital who feels it incumbent upon himself to undertake it.

Experience in the organisation of the transfusion service of the Royal Hospital, Wolverhampton, may prove useful to those who are struggling with the same problem elsewhere and is therefore here recorded.

The service was first organised some ten years ago, a plea was made through the press for donors and met with a good response. As a result a roster of about 50 was established. All donors not only gave their services free but also arranged for their own transport to and from the hospital. Most of them were working men, and often the giving of their services entailed to them pecuniary loss not only in the cost of transport but also in time lost from work. For the most part these donors responded readily when called upon, and on no occasion was any complaint of time and money lost or any demand for remuneration received. The hospital is deeply indebted to them.

The service was run from the pathological department of the hospital and as transfusions increased in frequency became an ever increasing addition to the work of an already fully occupied department. Difficulties involving the expenditure of much time and energy were perpetually arising in getting hold of donors, and, particularly at night, in arranging transport. It became evident that the organisation and maintenance of the service could no longer depend entirely upon the staff of the pathological department.

On the suggestion of the house governor, Mr W. H. Harper, the needs and difficulties of the hospital in this respect were laid before the then president of the Rotary Club, Mr J. Whitehead. To him the state of affairs immediately presented itself as an opportunity for putting into effect the club motto "Service for All." He called a meeting of the Rotary Club at which the director of the service was given an opportunity of explaining what was

required, the appeal met with a gratifying enthusiastic reception. A similar address was given to the affiliated Round Table Club and as a result the two clubs undertook to organise not only a donor but also a transport service.

The organisation of the combined service was delegated to Rotarian E. G. Matthewman and Tabler L. R. Guy, both of Wolverhampton. The result of their efforts has been to place at the disposal of the Royal Hospital a blood transfusion service, with associated transport service, which have since worked and continue to work with the utmost efficiency and—so far as its hospital end is concerned—with amazingly little effort.

TRANSFUSION OFFICER

In order to secure so far as possible the efficient working of the service on the hospital side and in particular with a view to ensuring that withdrawals

FORM 1

ENROLMENT FORM—BLOOD DONOR

I freely offer myself for Blood Transfusion, and undertake to be ready to proceed to The Royal Hospital when called upon.

DATE _____ SIGNED _____

Mr.
Mrs.
FULL NAME _____ Age _____

ADDRESS _____

If a member of any Social Service Organisation. Please give particulars _____

Days and times when it is convenient for me to have Group Test taken at The Royal Hospital as set out below —

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Time	Time	Time	Time	Time	Time	Time

HOSPITAL PURPOSES ONLY

Date and Time appointment suggested _____

By _____

The undermentioned to be completed by Doctor after taking Group Test.

DATE _____ FILING CARD COMPLETED BY _____

of blood were made by someone thoroughly experienced in the procedure, the hospital established the post of blood transfusion officer, this is combined with that of resident assistant pathologist. The duties of this officer are defined as follows —

1 The transfusion officer shall work under the supervision of the director of the transfusion service.

2 He/she shall have charge of the files of donors and of transport and of all other documents in connexion with the service.

3 He/she shall deal with the enrolment of new donors and shall see that on enrolment their blood groups are ascertained the Wassermann reaction examined, and the results properly and punctually recorded.

4 He/she shall see that all solutions necessary for the performance of transfusions and all the apparatus required for the withdrawal of blood and in the performance of transfusions is available in the laboratory and in a condition for immediate use.

5 Unless either a member of the honorary staff or the resident assistant surgeon expresses his intention of doing so it shall be the duty of the officer to withdraw the blood from the donor.

* Contribution to discussion at the summer meeting of the Association of Clinical Pathologists Hastings June 12th 1937.

5. If called upon to do so the transfusion officer shall either himself perform the transfusion or shall assist a member of the honorary staff or the resident assistant surgeon in its performance

ORGANISATION

The smooth working of the organisation has largely depended upon the series of enrolment and record forms designed by its secretaries. The methods of business organisation are strange to most medical men and it may be worth describing these forms in case they may prove useful to others.

Form 1 is filled in in duplicate on enrolment by the donor and handed over to one of the secretaries. It gives times convenient to himself at which the volunteer can attend at the pathological department for examination of his blood. The original is forwarded to the house governor of the hospital who after consultation with the blood transfusion officer fills in Form 2 and sends it to the volunteer in question.

Form 3 is filled in when the volunteer arrives at the pathological department. The upper portion of this form gives details of the availability of the volunteer. The lower portion is devoted to medical details of his blood group and general suitability. On completion this form is forwarded to one of the

FORM 2

BLOOD TRANSFUSION SERVICE

Dear _____

The Board of Management of the Royal Hospital tender to you their grateful thanks for your kind offer to become a member of the Blood Transfusion Service.

In order that the usual test may be taken will you kindly attend here on _____ the _____ at _____ Please ask for _____ who will take the test.

Yours very truly

DOCKE GOVERNOR & SECRETARY

To

secretaries by whom Form 3A is filled in. This is the final record and is a filing card. It is kept in four colours each of which indicates one of the four blood groups. The appropriately coloured and designated card is filled in according to the data supplied on Form 3. Besides reproducing the information given on

FORM 3

BLOOD DONOR

NAME IN FULL _____

District _____ Sex _____ Form No. 3
Date of Birth _____
Occupation _____

Group _____ District _____
Informer Transfusion Volunteer The Mr. Mrs. Miss _____

PRIVATE ADDRESS IN FULL

Telephone Exchange _____ No. _____
Recent Mails Road _____
Any well known Landmark for guidance of Drivers _____

Apartment, Mileage from Queen Square _____

Times or special occasions when NOT available (include Business Hours) _____

BUSINESS NAME AND ADDRESS

Telephone Exchange _____ No. _____
Recent Mails Road _____
Any well known Landmark for guidance of Drivers _____

Apartment, Mileage from Queen Square _____

USUAL BUSINESS HOURS

Day	Morning	Afternoon	Evening
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday			

For Medical Details and Services Referenced Remains not other side.

Records completed by _____ Date _____

MEDICAL DETAILS.

1. Age Value _____
2. Physique _____
3. W.B. _____
4. Tests taken by _____ Group _____ Date _____

REMARKS.

This Form when completed to be forwarded with Enrolment Form and duplicate of House Governor's letter to one of the undersigned Joint Honorary Secretaries to enable the records to be completed.

1. ROTARIAN E. C. MATTHEWMAN, Bankers Bank, Ltd., 5, New St., Wolverhampton. Telephone 2202.
2. TABLER L. R. GUY, B. Birmingham, Ltd., 5, New St., Wolverhampton. Telephone 2422.

are provided with special labels fixable to the windscreen of the car, these bear in large letters the words "EMERGENCY CAR" and in smaller "The Royal Hospital Blood Transfusion Service". Each label issued also carries a registration number by which the identity of the person to whom it was issued may be known. Cars showing this label are given precedence over all other traffic.

The routine for the enrolment of the transport volunteers involves no medical work and is undertaken entirely by the secretaries. Final entry of the details is made on Form 8 which is again a filing card.

When completed, the filing cards—Form 3A for donors and Form 8 for transport volunteers—are returned to the pathological department where they are kept in a file under the charge of the director of the service.

When a donor is required, several cards of suitable donors are selected and handed into the telephone office of the hospital from which the call is sent out. If transport is required calls are similarly sent out to a transport volunteer living in the same district. A donor having been secured, the cards are returned to the transfusion officer by whom the requisite entries are made.

Form 5 is sent to the donor as a recognition of his services, it is the only recognition he gets.

SERVICE REGULATIONS

The following regulations govern the working of the service within the hospital—

1 Whenever time allows an attempt shall always be made to secure the services of friends or relatives of the patient as donors, before a call is made upon donors enrolled in the blood transfusion service of the hospital.

2 Whenever a donor under the service is called upon, arrangements shall be made for his reception immediately on arrival at the hospital, and for the withdrawal of blood and his release at the earliest possible moment.

FORM 8

BLOOD TRANSFUSION TRANSPORT

District ☐ (Private Address)

District ☐ (Business Address)

NAME IN FULL

Car Label No.

Telephone Exchange No. _____
Times or special occasions when NOT available
excluding Business Hours.

Telephone Exchange No. _____
USUAL BUSINESS HOURS.

Day	Morning	Afternoon	Evening (if any)
Monday			
Tuesday			
Wednesday			
Thursday			
Friday			
Saturday			
Sunday (if any)			

FULL ADDRESS.

BUSINESS NAME AND ADDRESS.

Dept.

Approx. Mileage from Queen Square

Approx. Mileage from Queen Square

PLEASE COMPLETE SERVICE RECORDS OVERLEAF

RECORDS OF SERVICES RENDERED

Date	Time	Reply Yes No Out	Operator's Initials	Date	Time	Reply Yes No Out	Operator's Initials	Date	Time	Reply Yes No Out	Operator's Initials

FORM 5



THE ROYAL HOSPITAL, WOLVERHAMPTON

Blood Transfusion Service



IS HEREBY RECORDED THAT

voluntarily gave Blood for Transfusion at the Hospital on

to aid an unknown sufferer.

Service

Head Governor & Secretary

3 Except in cases of extreme urgency, a direct matching of the red cells of the proposed donor against the serum of the proposed recipient shall always be made in the pathological department under the supervision of the director of the transfusion service, or his deputy before a donor is actually selected for use.

4 Blood shall only be withdrawn with the donor in a recumbent position.

5 The withdrawal of blood shall be made either by a member of the honorary staff, the resident assistant surgeon, or the transfusion officer. Resident officers other than those named shall not withdraw blood from donors under the service.

6 Withdrawal of blood from donors under the service shall be made by means of venipuncture only, under no circumstances shall the vein be exposed. A local anesthetic shall always be used before needling the vein.

7 Donors shall remain recumbent for at least ten minutes after the withdrawal of blood. Thereafter they may be allowed to leave the hospital. Donors during their attendance at hospital must be treated with every possible courtesy and attention.

CONCLUSION

Since its inception two years ago the system has worked with the maximum of efficiency and the minimum of trouble, the shortest time to elapse between the sending out of a call for a donor and his appearance at the hospital has been two minutes and even at night the time has never exceeded two hours. All lay workers—secretaries and donor and transport volunteers alike—give their services without remuneration. Even the printing and stationery has through the kindness of a member of the Rotary Club been provided free of charge. The service is designed and maintained entirely for the benefit of the patients in the Royal Hospital. Neither donor nor recipient is

ever made aware of the identity of the other. The question of making the services of the volunteers available for patients outside the hospital has been freely canvassed. It was feared that this might lead to exploitation and it has not therefore been put into effect.

On behalf of my colleagues on the staff of the Royal Hospital I should like to take this opportunity of thanking publicly the organisers, the secretaries and all volunteers.

MEDICINE AND THE LAW

Doctors and Panel Dentistry

WHEN in 1921 the Dentists Act conferred a monopoly of dental practice upon registered dentists there was a saving clause to protect the practice of dentistry by a registered medical practitioner. This did not mean that the registered doctor when practising dentistry became for all purposes the equivalent of a registered dentist. The Dental Benefit Regulations for instance do not contemplate that a panel patient shall receive dental treatment from a doctor. The regulations declare that the patient may have dental treatment from any dentist who is prepared to provide such treatment at scale fees. The word "dentist" in this context means a registered dentist; the medical practitioner unless his name appears also on the Dentists Register is excluded.

The point was made clear last week in *Bynoe v. General Federation of Trade Unions Approved Society*. A man named Evans being a member of the defendant society received dental treatment from Dr. Bynoe who sent the society an account for £1 12s 6d on the prescribed form known as a dental letter. The approved society told Mr. Evans that it could not pay the account. Dr. Bynoe's name not being on the Dentists Register. The society suggested that Mr. Evans should get an estimate from somebody who was registered as a dentist. Dr. Bynoe then applied to the High Court for an injunction to prevent the defendant society from saying or writing that he was a person not entitled to give dental service or to receive payment for such service under the National Health Insurance Act. Clearly the society was in the right inasmuch as the wording of the regulations excluded dental service by anyone but a registered dentist. Dr. Bynoe as Mr. Justice Simonds observed was not a person with whom arrangements had been made to give dental treatment in accordance with the Dental Benefit Regulations. He could therefore not succeed unless he could impeach the regulations as *ultra vires* and void. The regulation making powers given by the National Health Insurance Act are wide: they not only cover many purposes where such powers are expressly conferred but they also extend to the elastically stated purpose of carrying the Act into effect generally. The court decided that there was no substance in the suggestion that the Dental Benefit Regulations or any of them were *ultra vires*. There may, said the judge, "be persons not on the Dentists Register who are quite competent to give dental treatment, but I can quite understand the Minister of Health confining the right to give dental treatment under the Act to those persons who are on the Dentists Register."

Synthetic Vinegar

The Food and Drugs (Adulteration) Act penalises the sale of substances not of the nature, substance and quality demanded by the purchaser but does not

attempt to prescribe specific standards for all conceivable foods and drugs. The magistrates, if there is no prescribed standard must listen to the evidence and adopt their own standard. They must decide for instance whether if a purchaser asks to be supplied with vinegar a synthetic substance can be served. The Westminster city council recently brought a test case on this point. A fish frier was fined £5 with 25 guineas costs for selling vinegar which, on analysis was found to consist of acetic acid and water coloured with burnt sugar. The council contended that vinegar means brewed vinegar and that brewed vinegar has a distinct and pleasant aroma which synthetic vinegar does not possess. If a purchaser asks for vinegar and is given synthetic vinegar he should be told what he is getting. On appeal to the London sessions the conviction was confirmed. There was evidence that

table vinegar is the trade name for synthetic vinegar, that the manufacturers have had no complaints and that 80 to 90 per cent. of the vinegar trade is in the non fermented or synthetic type. The appeal tribunal dismissing the appeal with 75 guineas costs expressed itself as satisfied that if sold without qualification the substance offered as vinegar or table vinegar was the product of fermentation. The court thus falls into line with the decision in *Preston v. Jackson* (1929) or perhaps carries the decision a little further. Synthetic vinegar plainly cannot be sold as malt vinegar: the recent case suggests that it cannot be sold as table vinegar either. There seems no reason why trade interests should find a way round the Food and Drugs (Adulteration) Act by inventing a commercial name which does not tell the purchaser what he may want to know.

These decisions grow more important as the commercial application of chemistry is developed. In *Bowler v. Woodroffe* (1928) a bottle bore the label "extract of meat and malt wine." The prosecution argued that the word "wine" implied the presence of the fermented juice of the grape. The analyst's certificate said Mr. Justice Avory stated that the article was not a meat and malt wine: the magistrate therefore unless any evidence qualified or contradicted that statement ought to hold that the article was sold to the prejudice of the purchaser. There are probably considerable opportunities for enforcing the law in respect of synthetic lime-juices, lemon squashes and fruit juice products. It would be interesting to see what evidence is given of the inferiority of the synthetic article in respect of taste, flavour or dietetic value.

NEW BUILDING FOR THE GENERAL NURSING COUNCIL. The new home of the council which is to be opened to-day, Friday by the Princess Royal, occupies the site of two houses built between 1776 and 1778 from the designs of Robert and James Adam. Although the paintings (attributed to Cipriani) on the ceilings were done on paper which was stuck to the plaster ceilings in the old houses, they were all successfully taken down unharmed and incorporated in the designs for the new ceilings after the necessary cleaning and repair. Some mahogany doors and fireplaces as well as the iron balustrading on the main stair landings and a beautiful fanlight over the front door were taken from the council's former offices at No. 20 Portland place. The outside of the building is faced with Portland stone and the stairs up to the second floor have margins of marble while the hall and stairways are panelled with marble. The council room is panelled with sycamore and other woods used for rosmos on the first floor are cherry, Indian laurel, English walnut and Honduras cedar. The new address of the council is 23 Portland place, W.

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM TWELFTH MAN

IV

It is difficult, and perhaps impossible, to eliminate entirely one's personal bias from a discussion of public questions. If I were asked my opinion of the National Campaign for Physical Fitness I should say that I saw no reason to believe that physical fitness and good health were synonymous terms, that brains and character were more important than physical fitness, that it was stupid to be more physically fit than was necessary for the daily performance of one's job and the enjoyment of one's recreation, that an inquiry into the mental health of the community and a campaign for mental fitness were of vastly more importance, that if our leaders were thinking of the next war, it would be wise to pay more attention to our intelligence quotients and less to our chest measurements, that if the hearties who directed this National Campaign were looking for a slogan I should suggest, 'The Lord taketh no delight in the legs of a man.'

This is not a complete view of this question, but I should be prepared to defend it as more rational than the views of the ardent physical campaigners. It is not, however, free from personal bias. It owes something to the fact that in the gymnasium I was wont to reach the top of the ropes—perspiringly last, that in the days when I considered it my duty to take a morning run I arrived back for breakfast feeling slightly sick and spent the rest of the day in a mental twilight, and that a mediocrity at ball games was early accepted as part of my inadequate endowment.

If it is of such childish reminiscences, with a nice admixture of acquired prejudice, that the rational opinions of our maturity are composed it is not surprising that Freud has issued a modern version of Cromwell's injunction: "Gentlemen, I beg you to remember, in the name of the Censor, that you *must* be mistaken." It is a comforting reflection that Freud does not escape his own net.

* * *

We are invited, as doctors, to believe that we have some specific contribution to make to the question of war and peace. The Medical Peace Campaign (which is not, as might be imagined, an organisation devoted to the propagation of peace amongst doctors) suggests "that the profession as a whole should be urged constantly to debate the problems associated with war and its causation much as it debates the etiology and prevention of disease." My reply would be that this last subject is our business, but with the former we have, as a profession, no concern. Indeed the intrusion of amateurs like ourselves into this expert field may even make war more likely, and cannot engender peace.

Moreover, doctors have no common opinion on such matters. Why should they? Are the members of the Medical Peace Campaign to be expected to agree with the opinion of Sir Arthur Keith 'that the world, we are afraid, must sleep forever with a loaded gun by its side'? I detest and deplore this attitude of Keith's, but his opinion and my dislike of it find no support in our professional knowledge.

Is democracy worth fighting for? Is the British Empire worth fighting for? Is the maintenance of a democratic state in Czechoslovakia worth fighting for? Was the independence of Abyssinia worth fighting for? We all, I hope, have our minds made up on these problems, as men, these questions touch us nearly, but as doctors not at all. We are urged by the Medical Peace Campaign to join the peace councils and the branches of the League of Nations Union. Why? And which? For all these different organisations have different opinions on this question of peace, and all of them give different answers to the four questions posed above.

But I shall be told that it is not suggested that medical opinion can have anything to do with immediate problems. It is the more remote and the more profound causes of war that are to be debated, considered, assessed, and eradicated, that the more important causes of war are psychological, and it is therefore the psychologist's business to explain and eradicate these causes not only in ourselves but in the Japanese, the Argentines, and the Greeks.

Well it may be so. And if it is so, it is a job not for the average doctor, not for the Medical Peace Campaign, but for the expert psychologist—and, saving their reverences, are any of them expert in this field? Trotter, who is genius enough to be expert in two worlds, wrote a magnificent book many years ago on "The Herd Instinct." His is still a lonely distinction. I have just read a pamphlet by Dr Burnett Rae, recommended by THE LANCET, entitled "Psychology and the Problem of War." It is sound and sensible but it contains no new ideas, and it could equally well have been written by an intelligent layman who was interested in the subject. I came with more hope to Graham Howe's new book, entitled "War Dance," and was the more disappointed. His book is full of good ideas but it is always difficult and often irritating. He has developed a highly stylised method of writing—Gertrude Stein married to James Joyce. Almost any page will show sentences of this sort, "The way of peace cannot be more sure than that of war accepted, peace about war, difference agreed upon, tolerant relations amidst the moving stress of opposing poles rhythm and harmony." Or this, "The unseen other aspect of this untimely error of masturbation is the Holy Spirit, source of communion, deepest ecstasy, but opposite pole. To interfere with one is to upset the other, to which the lower needs to be lovingly lifted." Ideas drowned in a sea of words. Such a book cannot be a practical contribution to the understanding of the causes of war.

* * *

Nothing makes me more warlike than the pronouncements of some psychologists on peace. I should have hesitated to make this admission if a distinguished psychologist had not told me that he was affected in the same way. It has become almost customary for a group of psychologists to issue round robins to the press at times of international crisis. It has seemed to me that these contributions exacerbate controversies without elucidating issues. To say that Germany since the Treaty of Versailles is suffering from an inferiority feeling is to say

what everybody knows diagnosis is easier therapy more difficult. To say that fear is the underlying cause of trouble in Europe, that Czechoslovakia is in an anxiety state is to announce a platitude. To declare in Rome that Mussolini's desire for empire springs from unpleasant psychological causes would be as heroic last gesture to say it in London is merely to cock an irritating snook.

To the rules I gave last week for the conduct of experts let me add one more for psychologists dogmatizing about international affairs. Psychotherapeutic technique which has not as yet been uniformly successful in individual disorders should be used sparingly in international affairs—and when used it should be limited in its application to the psychotherapist's own countrymen.

* * *

It is commonly held that science is an intellectual force that works for peace. If this is true at all it is true in the same or greater degree of art of literature of education of religion of trade of easy transport. Nationalist temper runs so high to day that it is difficult even for men of goodwill to emulate the serene detachment of Sir Thomas Browne when he wrote some hundred years ago in *Religio Medici*:

I feel not in myself these common antipathies that I can discover in others: those natural repugnances do not touch me nor do I behold with prejudice the French Italian Spaniard or Dutch but where I find their actions in balance with my countrymen I honour love and embrace them in the same degree.

* * *

If the propaganda in favour of euthanasia does nothing else it should develop a more balanced attitude towards the problem of suicide. It is difficult to understand the attitude of the Law and the Church: it almost certainly does not represent the mind of lawyers and churchmen. Most family doctors have witnessed a drama where suicide seemed the sane and obvious solution. The coroner occasionally receives a letter in which the writer states in restrained and dignified language that he has not wished to prolong an intolerable existence. A merciful but illogical jury brings in a verdict of suicide while of unsound mind because it is in England not only a disgrace but a crime that a sane man should die by his own hand.

The Romans viewed the question differently. Lecky in his *History of European Morals* quotes this noble passage from Seneca, "I will not relinquish old age if it leaves my better part intact. But if it begins to shake my mind, if it destroys my faculties one by one if it leaves me not life but breath I will depart from the putrid or tottering edifice. I will not escape by death from disease so long as it may be healed and leaves my mind unimpaired. I will not raise my hand against myself on account of pain for so to die is to be conquered. But if I know that I must suffer without hope of relief I will depart not through fear of pain itself but because it prevents all for which I would live."

* * *

Raymond Asquith was in a company where this problem was being debated and he was maintaining that suicide was often justifiable but it should be encompassed in as tidy and as dignified a manner as possible and that all the great historical characters who had died by their own hands had thus improved the occasion. What about Judas Iscariot? asked someone irrelevantly. Oh that's the worst of these nouveau riches said Raymond Asquith.

Sir William Willeox and his friends may be said to have won the Battle of the Barbiturates. The family physician views this victory without enthusiasm and even with distaste. The result for him is a few more regulations to be observed. In a town of 150,000 people in which I write, some hundreds of thousands of barbiturate tablets are consumed by the inhabitants every year. There has never been a case of barbiturate poisoning here and it was a safe bet that there would never be one. The family doctor knows that the barbiturates are not drugs of addiction and he sees himself condemned to observe tiresome regulations because a handful of neurotics in London chose to imitate one another in this method of committing or attempting to commit suicide. Before the issue of the new regulations this fashion was already abating. In the provinces the rope the knife the river and the gas oven are the methods of election. And these remain uncontrolled. The socially important reason for a Dangerous Drugs Act is not that such drugs when taken in excess, kill but simply that they create a craving and produce an appalling mental and moral disintegration. Nothing of the sort can be urged against the barbiturates.

* * *

As the years pass it becomes increasingly unlikely that any attempt will be made to control the patent medicine industry. The enormous advertising revenues which the trade brings to newspapers make it a hot subject for any Government to handle. Is it too much to hope however that we may get some thing done about the proprietary preparations of reputable manufacturing druggists? Many of the manufacturing houses have put advancing medicine heavily in their debt. Progress and profit have gone hand in hand. A few of them have been from a scientific point of view almost without blemish. But even the best of them are sometimes guilty of the higher charlatanism and their besetting sin is still as it was thirty or forty years ago polypharmacy. A very distinguished American firm is at the moment pushing a preparation containing liver stomach concentrate iron and vitamin B. This is blunder bus prescribing of the worst sort. These are substances which have in modern therapeutics a well-defined and limited value. To say this is not to ignore the facts that there is a small minority of patients with pernicious anaemia who benefit by iron therapy and that a handful of patients with microcytic anaemia improve more rapidly with liver extract added to iron. To suggest that this product should be used in all anaemias where the facilities for making a definite diagnosis are temporarily not available is to invite the doctor to share in a make believe. To suggest further that this product may be of value in clinical conditions without anaemia characterised by loss of appetite weakness fatigability or under-nutrition is to descend to the level of the advertisement of patent medicines.

I have before me a list of the proprietary preparations used by one of the most renowned manufacturing chemists in the world. The list contains more than 200 products some of the highest value; but at least 10 per cent of them could not be supported by any scientific justification. Two brands of liver extract have recently been advertised. One was described as the purest available and the other as

from twice to forty times as pure as any other liver extract. Lord Baldwin likes to refer to the many-sidedness of truth. The truth must not only be

(Continued at foot of next page)

GRAINS AND SCRUPLES

Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month, his name can be seen later in the half yearly index

FROM TWELFTH MAN

IV

IT is difficult, and perhaps impossible, to eliminate entirely one's personal bias from a discussion of public questions. If I were asked my opinion of the National Campaign for Physical Fitness I should say that I saw no reason to believe that physical fitness and good health were synonymous terms, that brains and character were more important than physical fitness, that it was stupid to be more physically fit than was necessary for the daily performance of one's job and the enjoyment of one's recreation, that an inquiry into the mental health of the community and a campaign for mental fitness were of vastly more importance, that if our leaders were thinking of the next war, it would be wise to pay more attention to our intelligence quotients and less to our chest measurements, that if the hearties who directed this National Campaign were looking for a slogan I should suggest, "The Lord taketh no delight in the legs of a man."

This is not a complete view of this question, but I should be prepared to defend it as more rational than the views of the ardent physical campaigners. It is not, however, free from personal bias. It owes something to the fact that in the gymnasium I was wont to reach the top of the ropes—perspiringly last, that in the days when I considered it my duty to take a morning run I arrived back for breakfast feeling slightly sick and spent the rest of the day in a mental twilight, and that a mediocrity at ball games was early accepted as part of my inadequate endowment.

If it is of such childish reminiscences, with a nice admixture of acquired prejudice, that the rational opinions of our maturity are composed it is not surprising that Freud has issued a modern version of Cromwell's injunction: "Gentlemen, I beg you to remember, in the name of the Censor, that you must be mistaken." It is a comforting reflection that Freud does not escape his own net.

* * *

We are invited, as doctors, to believe that we have some specific contribution to make to the question of war and peace. The Medical Peace Campaign (which is not, as might be imagined, an organisation devoted to the propagation of peace amongst doctors) suggests "that the profession as a whole should be urged constantly to debate the problems associated with war and its causation much as it debates the ætiology and prevention of disease." My reply would be that this last subject is our business but with the former we have as a profession, no concern. Indeed the intrusion of amateurs like ourselves into this expert field may even make war more likely and cannot engender peace.

Moreover, doctors have no common opinion on such matters. Why should they? Are the members of the Medical Peace Campaign to be expected to agree with the opinion of Sir Arthur Keith that the world, we are afraid, must sleep forever with a loaded gun by its side? I detest and deplore this attitude of Keith's, but his opinion and my dislike of it find no support in our professional knowledge.

Is democracy worth fighting for? Is the British Empire worth fighting for? Is the maintenance of a democratic state in Czechoslovakia worth fighting for? Was the independence of Abyssinia worth fighting for? We all, I hope, have our minds made up on these problems, as men, these questions touch us nearly, but as doctors not at all. We are urged by the Medical Peace Campaign to join the peace councils and the branches of the League of Nations Union. Why? And which? For all these different organisations have different opinions on this question of peace, and all of them give different answers to the four questions posed above.

But I shall be told that it is not suggested that medical opinion can have anything to do with immediate problems. It is the more remote and the more profound causes of war that are to be debated, considered, assessed, and eradicated, that the more important causes of war are psychological, and it is therefore the psychologist's business to explain and eradicate these causes not only in ourselves but in the Japanese, the Argentines, and the Greeks.

Well it may be so. And if it is so, it is a job not for the average doctor, not for the Medical Peace Campaign, but for the expert psychologist—and, saving their reverences, are any of them expert in this field? Trotter, who is genius enough to be expert in two worlds, wrote a magnificent book many years ago on "The Herd Instinct." His is still a lonely distinction. I have just read a pamphlet by Dr. Burnett Rae, recommended by THE LANCET, entitled "Psychology and the Problem of War." It is sound and sensible but it contains no new ideas, and it could equally well have been written by an intelligent layman who was interested in the subject. I came with more hope to Graham Howe's new book entitled "War Dance," and was the more disappointed. His book is full of good ideas but it is always difficult and often irritating. He has developed a highly stylised method of writing—Gertrude Stein married to James Joyce. Almost any page will show sentences of this sort, "The way of peace cannot be more sure than that of war accepted, peace about war, difference agreed upon tolerant relations amidst the moving stress of opposing poles rhythm and harmony." Or this, "The unseen other aspect of this untimely error of masturbation is the Holy Spirit, source of communion, deepest ecstasy, but opposite pole. To interfere with one is to up it the other to which the lower needs to be lovingly lifted." Ideas drowned in a sea of words. Such a book cannot be a practical contribution to the understanding of the causes of war.

* * *

Nothing makes me more warlike than the pronouncements of some psychologists on peace. I should have hesitated to make this admission if a distinguished psychologist had not told me that he was affected in the same way. It has become almost customary for a group of psychologists to issue "round robins" to the press at times of international crisis. It has seemed to me that these contributions exacerbate controversies without elucidating them. To say that Germany since the Treaty of Versailles is suffering from an inferiority feeling is to say

what everybody knows diagnosis is easy therapy more difficult To say that fear is the underlying cause of trouble in Europe that Czechoslovakia is in an anxiety state is to announce a platitude To declare in Rome that Mussolini's desire for empire springs from unpleasant psychological causes would be an heroic last gesture to say it in London is merely to cock an irritating snook

To the rules I gave last week for the conduct of experts let me add one more for psychologists dogmatizing about international affairs Psychotherapeutic technique which has not as yet been uniformly successful in individual disorders should be used sparingly in international affairs—and when used it should be limited in its application to the psychotherapist's own countrymen.

* * *

It is commonly held that science is an intellectual force that works for peace If this is true at all, it is true in the same or greater degree of art, of literature of education of religion of trade of easy transport Nationalist temper runs so high to-day that it is difficult even for men of goodwill to emulate the serene detachment of Sir Thomas Browne when he wrote some hundred years ago in *Religio Medici* :

I feel not in myself those common antipathies that I can discover in others : those natural repugnances do not touch me nor do I behold with prejudice the French Italian Spaniard or Dutch but where I find their actions in balance with my countrymen I honour love and embrace them in the same degree

* * *

If the propaganda in favour of euthanasia does nothing else it should develop a more civilized attitude towards the problem of suicide. It is difficult to understand the attitude of the Law and the Church ; at almost certainly does not represent the mind of lawyers and churchmen. Most family doctors have witnessed a drama where suicide seemed the sane and obvious solution The coroner occasionally receives a letter in which the writer states in restrained and dignified language that he has not wished to prolong an intolerable existence A merciful but illogical jury brings in a verdict of suicide while of unsound mind because it is in England not only a disgrace but a crime that a sane man should die by his own hand

The Romans viewed the question differently. Livy in his *History of European Morals* quotes this noble passage from Seneca : I will not relinquish old age if it leaves my better part intact But if it begins to shake my mind if it destroys my faculties one by one if it leaves me not life but breath I will depart from the putrid or tottering edifice I will not escape by death from disease so long as it may be healed and leaves my mind unimpaired I will not raise my hand against myself on account of pain for so to die is to be conquered. But if I know that I must suffer without hope of relief I will depart not through fear of pain itself but because it prevents all for which I would live

* * *

Raymond Asquith was in a company where this problem was being debated and he was maintaining that suicide was often justifiable but it should be encompassed in as tidy and as dignified a manner as possible and that all the great historical characters who had died by their own hands had thus improved the occasion What about Judas Iscariot ? asked someone irrelevantly Oh that's the worst of these nouveaux riches said Raymond Asquith.

Sir William Willecox and his friends may be said to have won the Battle of the Barbiturates The family physician views this victory without enthusiasm and even with distaste The result for him is a few more regulations to be observed In a town of 150 000 people in which I write, some hundreds of thousands of barbiturate tablets are consumed by the inhabitants every year There has never been a case of barbiturate poisoning here and it was a safe bet that there would never be one The family doctor knows that the barbiturates are not drugs of addiction and he sees himself condemned to observe tiresome regulations because a handful of neurotics in London chose to imitate one another in this method of committing or attempting to commit suicide Before the issue of the new regulations this fashion was already abating In the provinces the rope the knife the river and the gas oven are the methods of election And these remain uncontrolled The socially important reason for a Dangerous Drugs Act is not that such drugs when taken in excess kill but simply that they create a craving and produce an appalling mental and moral disintegration Nothing of the sort can be urged against the barbiturates

* * *

As the years pass it becomes increasingly unlikely that any attempt will be made to control the patent medicine industry The enormous advertising revenues which the trade brings to newspapers make it a hot subject for any Government to handle Is it too much to hope however that we may get some thing done about the proprietary preparations of reputable manufacturing druggists ? Many of the manufacturing houses have put advancing medicine heavily in their debt Progress and profit have gone hand in hand A few of them have been from a scientific point of view almost without blemish But even the best of them are sometimes guilty of the higher charlatanism and their besetting sin is still, as it was thirty or forty years ago polypharmacy A very distinguished American firm is at the moment pushing a preparation containing liver-stomach concentrate iron and vitamin B This is blunder buss prescribing of the worst sort These are substances which have in modern therapeutics a well defined and limited value To say this is not to ignore the facts that there is a small minority of patients with pernicious anemia who benefit by iron therapy and that a handful of patients with microcytic anemia improve more rapidly with liver extract added to iron To suggest that this product should be used in all anemias where the facilities for making a definite diagnosis are temporarily not available is to invite the doctor to share in a make believe To suggest further that this product may be of value in clinical conditions without anemia characterised by loss of appetite weakness fatigability or under nutrition is to descend to the level of the advertisers of patent medicines

I have before me a list of the proprietary preparations issued by one of the most renowned manufacturing chemists in the world The list contains more than 200 products some of the highest value but at least 10 per cent of them could not be supported by any scientific justification Two brands of liver extract have recently been advertised One was described as the purest available and the other as from twice to forty times as pure as any other liver extract Lord Baldwin likes to refer to the many-sidedness of truth The truth must not only be

(Continued at foot of next page)

CORRESPONDENCE

THE REVISED MEDICAL CURRICULUM

To the Editor of THE LANCET

SIR,—The recent session of the General Medical Council was largely occupied with consideration of the revised medical curriculum which the Council proposes should come into operation in November, 1938. Its resolutions show a general agreement with the recommendations for the reform of the medical curriculum contained in the report (April, 1935) of a conference of those licensing bodies whose qualifications are taken by students in the London medical schools. Upon this conference were representatives from the University of London, the Universities of Oxford and Cambridge, from the Conjoint Board of the Royal College of Physicians and the Royal College of Surgeons, and the Society of Apothecaries, but no representative of the General Medical Council. The recommendations of the conference concern only the London medical schools, but the resolutions of the General Medical Council as the statutory authority on medical education are operative throughout the United Kingdom and the Irish Free State.

Reform of the medical curriculum has been pressed from various sources for many years, and notably from the student body, of which the medical society of St Mary's Hospital was the first in the field in May, 1932, with a resolution "That the present system of medical education does not produce an efficient practitioner." In June, 1933, the students' union of Edinburgh University carried the campaign farther. At a discussion opened by the senior physician of Edinburgh Infirmary the following resolution was passed, with only seven dissentients in a large assembly:—

That this House places on record its opinion that the present system of medical education in this country is unsatisfactory. In its opinion important changes in the curriculum are essential, whereby more facilities for instruction in practical medicine are available and more assistance given in the principles and practices of preventive medicine. The time required for this additional teaching can, in its opinion, be obtained by a judicious modification of the teaching in the earlier scientific subjects, with some revision of the time and attention devoted to the teaching in the "specials" department of medicine and surgery.

This resolution expressed a very general opinion held by teachers, examiners, and the great bulk of the

(Continued from previous page)

many-sided but double-faced if it embraces such statements as these:

They do these things better in America. The American Association has had, for many years, a Council on Pharmacy and Chemistry which examines carefully and reports on "New and Unofficial Remedies" and the claims made for them. If the remedies are rejected reasons are given and many manufacturers find it worth while to make alterations in their products in the light of the council's criticism. If the remedy is rejected advertising space in the *Journal of the American Medical Association* is automatically refused to it.

Doctors are urgently in need of protection from this ever increasing spate of new preparations. Could not the journals, the reputable manufacturing houses, and a central pharmaceutical council coöperate after the American example?

How long, O Lord, how long?

members of the medical profession, as well as by the students who recorded it, and who are the persons most directly concerned. How far does the new official curriculum now propounded by the General Medical Council meet the need thus revealed?

It is clear from examination of the resolutions that the duration of study is to be materially prolonged. At present the regulations of the University of London and of the licensing corporations in London allow of completion of the professional education of the student $5\frac{1}{2}$ years after taking the matriculation examination in the case of London University, 5 years after taking that examination or its equivalent in the case of the licensing corporations. The matriculation examination or its equivalent can be taken at the age of 16. But the new regulations envisage 18 as the earliest age at which the medical student can begin his professional education thus adding two years to the pre-registration period. This provision is necessary to meet the new requirement that the student shall complete his education in the preliminary scientific subjects—chemistry, physics and biology—before coming to the medical school. The period of professional study—that is, between the date of passing this entrance examination and the date of the final qualifying examination—is made up of two phases, two academic years (nine months each) are to be spent in the study of human anatomy and human physiology, and for the first time the elements of normal psychology are to be added to this course, as well as instruction in the elementary methods of clinical examination including physical signs, the use of the stethoscope, ophthalmoscope, &c [sic], and some initiation into the principles of general pathology, bacteriology, and pharmacology. Eighteen months is likely to be insufficient to cover this greatly enlarged and highly heterogeneous programme.

The second phase, the period of clinical studies, is to occupy three calendar years (12 months each), during which "clinical instruction should be continuous." The effect of this unobtrusive transformation of academic into calendar years is to add nine months to the curriculum and contradicts the assertion contained in the earlier part of the official statement that the period of professional study may be completed in five academic years (the italics are mine). The provision of the extra nine months is rendered eminently necessary by the further expansion of the requirements in the clinical period, which now entail in addition to several new subjects cited below in which instruction is required, residence for four months during the clinical period in a hospital in order to follow more closely the practice of the hospital in medicine, surgery, and midwifery, to meet a very vocal public demand for better midwifery instruction, two of these four months are to be spent in a maternity hospital or the maternity ward of a general hospital and "these two months should be devoted exclusively to instruction in midwifery and in the hygiene of infants."

The call for training in preventive medicine is met by the following direction: "Throughout the whole period of study the attention of the student should be directed by his teachers (a) to the importance of the measures by which normal health may be assessed and maintained, and (b) to the principles and practice for the prevention of disease." This resolution bears an unhappy resemblance to the resolution adopted by the Council in 1922 which runs as follows:

Throughout the whole period of study the attention of the student should be directed by his teachers to the importance of the preventive aspects of medicine and it is safe to predict that the new resolution equally nebulous, will be ignored as completely as was its predecessor.

Preventive medicine thus does not get any precise niche in the new temple of learning but the following items are specifically added to the special subjects of the old curriculum: dietetics, therapeutics and prescribing physiotherapy principles of nursing child welfare, psychology radiology as applied to medicine and to surgery, disease in infancy and in childhood, dental diseases and instruction on the statutory obligations of registered medical practitioners.

The revision of the medical curriculum has been conducted by bodies in which the general practitioner has either not been represented at all as in the case of the conference or by a small minority as in the case of the General Medical Council. The passing of the National Health Insurance Act established the general practitioner once and for all as the most important unit in the medical service of this country inasmuch as the service given by the Act was expressly defined as a general practitioner service. By the operation of the same Act as Sir Kaye Le Fleming pertinently points out, a standard is afforded of the range of a general practitioner's duties; that standard does not envisage any specialist experience. The production of an efficient general practitioner should therefore be the principal aim of medical education. There is abundant and accumulating evidence that the curriculum has been overloaded in the past and a further addition to it is surely disastrous. An admirable presentation of the ideal curriculum was given by Prof. T. G. Moorhead when president of the Royal Academy of Medicine in Ireland.

During the first two years the preliminary sciences should be taught. He felt strongly that a sound knowledge of these preliminary sciences including biology was absolutely essential. In teaching the principles of these sciences facts bearing on the future life work of the student should be used as much as possible in illustration. In the second or clinical part of the course he felt that there was only time to give a man a thorough knowledge of the principles of medicine surgery and midwifery. Once these principles were acquired and once a student was placed in a responsible position himself he could acquire additional facts with extraordinary rapidity. If however as a student he was swamped in detail and failed to acquire a scientific outlook he could never hope in after life to be a really sound practitioner. As far as possible he should be made familiar with the everyday emergencies included in the so-called specialities but a systematic course should be reserved for post-graduate teaching.

Can the present position be viewed with anything but anxiety by those who are convinced that the minimal curriculum for qualification should be designed first of all to meet the needs of the general practitioner and that the effort to produce a general specialist which in itself is a contradiction in terms should be finally abandoned?

The expense of medical education both to the individual and to the State is creating a very difficult position. The medical profession is becoming practically closed except to those who have abundant financial means. The expenditure by the State in subsidising medical education is a growing burden upon the community and those responsible for its distribution are ever more insistently asking the question whether that expenditure is justified. Could there be a less opportune occasion for producing a

curriculum which must inevitably exact an increased expenditure both of time and of money?

I am Sir yours faithfully

E. GRAHAM LITTLE.

House of Commons June 17th

THE OVER TREATMENT OF GONORRHOEA

To the Editor of THE LANCET

SIR,—This correspondence began with a piffing complaint about the over treatment of a case of gonorrhoea in a V.D. clinic—piffing because a clinic medical officer in his dark and uncritical world, is rightly concerned rather about the under treatment of gonorrhoea—and was continued by the report of another over treated patient who harboured prostatic calculi. Before the calculi were so creditably discovered in other hands the clinic had apparently in this case too cured the gonorrhoea. Interesting and again piffing. And now Mr. Johnston Abraham hots it up with the story of a V.D. clinic's failure to recognise early a cancer of the bladder. From his account the clinic's treatment of the stricture made easy that cystoscopy in other hands which disclosed the cancer. Gratitude is hard to find! Moreover he forgetting as do the other two Superior Complainants, that most of us live and practise long enough to have the painful pleasure of correcting and being corrected by each other lets loose against his brethren (I dare not write colleagues) of the V.D. clinics our so-called venereal experts his distinguished and discourteous diatribe. Distinction was to be expected of him discourtesy not. (Venereal experts reminds me of the happy occasion at our hospital when an eminent physician whose friendship I have long valued and enjoyed presented me to a noted and now startled lady visitor as our venereal doctor.)

Mr. Abraham's misfounded unguarded charges against us of ignorant incompetence unenlivened even by the hope of one day sitting down with Olympians, need not be met. But you may take it, Sir, that the V.D. clinics are well lighted enough to uncover (but of course rarely) the blunders of others even of those in the illumined Soranian world (so Mr. Abraham would have it) of Genito Urinary Surgery.

May I not also report? I select from the last few years

A surgeon to the G.U. dept. of a hospital sent his patient who confessed to a gonorrhoea one year previously for treatment to the V.D. clinic; and found time to write the short report—"hematuria, staphylococci." The man engine-room greaser chose the clinic nearest his home—mine. I found staphylococci alright; but no hematuria and no g.c.; until a week later after the patient had gone motor-cycling both of us (he first) found hematuria all right and staphylococci and no g.c. And so soon to the stone in his kidney. I claim no credit that should go to the motor bike.

A senior retired ship's officer asked me in the V.D. clinic if he were fit to marry. He handed me medical reports from which could be learnt that in the G.U. dept. of a hospital four years previously he had had a testis removed for sarcoma. Later a pathologist reported gumma. Later blood-serum Wassermann positive. Later malnourished but untreated transferred to care of a physician (in whom it would be reasonable to look for that "widest possible knowledge of internal medicine") who prescribed a mixture to be taken for three consecutive months in every year and this the patient had done. The mixture was pot lod and living perilous. All made very easy for me. As for him there was now added into him Angell Robert on pupils and Wassermann positive cerebro-spinal fluid.

And now I should humble me

A steward was sent by his ship's surgeon to my clinic for "pus in urine ? g.c." I could detect no g.c., but did try to treat the painless bloodless "cystitis." After five weeks of it he vanished. Six months later back from a voyage he called at hospital to see me. Another steward had advised him, from first-hand experience, to try a "better clinic with younger doctors." So he did, and a young gentleman had "popped it into him good and quick," and he, the patient, heard the chink as "it" hit the stone. Operation had removed stone from bladder and symptoms with it. Nevertheless, he gave me to understand I had been the honourable trier that young fellow "seemed to chance it like." Justice is indeed hard to find!

In conclusion, Sir, may I remind Mr Johnston Abraham that from what he thinks of and despises as too stony a ground—"the mental outlook of the old dead and gone regimental medical officer"—was raised up besides John Hunter, a Helmholtz, a Laveran, a Bruce, Ross, and Leishman, and one who should surely be a father for this Abraham, a Peter Freyer. Doubtless he shares with me the privilege of having once known and sat under the last four and he has forgotten them. These ghosts will not trouble him even though grace is, for the moment, hard to find in him.

And I have the idea that some surgeons had for long a clear field and few rivals with gonorrhœa in the male—and left it to us "unsurgical" newcomers in the new V.D. clinics.

I am, Sir, yours faithfully,

H. M. HANSCHELL,

Hon. Med. Supt. and M.O. 1/c V.D. Clinic,
Royal Albert Dock Hospital, E.

June 20th

To the Editor of THE LANCET

SIR,—Mr Johnston Abraham's attainments and experience in the fields of urology and of the venereal diseases are so well known that his pronouncements must receive the greatest respect and attention. For this very reason I ask leave to join issue with him on the subject of his recent damaging statements as to the training and standard of work of the venereal specialist.

Few will deny that there are disadvantages in the present system, and I believe that most medical officers of venereal diseases clinics would admit that the treatment of some patients with gonorrhœa is continued beyond the stage in which the benefit of treatment is apparent. The reason is to be found, not in the ignorance and carelessness of the medical officer, as Mr Abraham suggests, but in the realisation that, in the light of modern improved pathological tests, such patients cannot be regarded as non-infectious. The medical officer is between the Scylla of releasing the infectious patient, and the Charybdis of prolonging treatment unduly. Since he is unwilling to admit, even to himself that in such patients the disease is in eradication, he chooses the second alternative.

Mr Abraham truly says that venereal disease has always been the Cinderella of medicine but I cannot agree that the remedy lies in restoring syphilis to general medicine and gonorrhœa to urology. It is to the past neglect and indifference of the physician and the urologist that the present 'lowly position' of the venereal diseases is due. I believe that most of the shortcomings of venereal diseases clinics arise from an attitude of mind which Mr Abraham's letter well exemplifies. The student gains the impression from his medical and surgical instructors that the subject of the venereal diseases is an unworthy and slightly unsavoury study which no competent man

in his right mind would adopt as his sole life's work. In consequence there is small incentive for a man with the necessary medical and surgical background to regard the venereal diseases department as other than a possible convenience—a stepping stone to higher things. The appallingly high incidence of these diseases among the general population has compelled the public health authorities to intervene and endeavour, by public organisation and subsidy, to provide a remedy for a situation for which the medical profession as a whole is woefully to blame. The present inadequacy of the treatment of gonorrhœa must be regarded as a direct legacy from the past neglect of the urologist.

Mr Abraham deplores with Mr Nicholls the "unhappy and incompatible" marriage of two such widely dissimilar diseases as gonorrhœa and syphilis, yet he himself has shown by his able writings on the subjects of the treatment of both these diseases that the gulf of dissimilarity can be bridged. To the venereal diseases medical officer this incompatibility is less obvious since his daily problems in psychology, arising from the patients' shame and the necessity for concealment, and his difficult task of handling family situations, are almost identical in relation to the two diseases. There is also the practical consideration that it is common to find patients who are suffering from both gonorrhœa and syphilis. There are manifest advantages in treating both infections in the same department.

A sound knowledge of the fundamental principles of medicine and surgery is essential in venereal diseases practice as in all other branches of medical science, but the occasional dabbler in surgery, the surgical tinker, is always a menace. I do not agree that it is either necessary or desirable for the venereal diseases officer to be able to perform the surgical operations which Mr Abraham enumerates. The necessity is a close liaison between venereal disease departments and the departments of gynaecology and urology. By this means a competent surgical opinion is always available, and the venereal diseases cease to "live apart in a dark and uncritical world of their own."

Mr Abraham describes one case in which the blunder of a venereal diseases officer resulted tragically for his patient. It would be possible to give other instances where ignorance of the fundamentals of the diagnosis and treatment of venereal diseases on the part of the urologist and physician have resulted most tragically for patients and their families. But such recriminations are valueless and even harmful. From the wealth of Mr Abraham's experience one might have hoped for some more helpful and constructive suggestions in dealing with the undeniable difficulties of the present situation.

I am, Sir, yours faithfully,

Harley street W. June 21st AMBROSE J. KING

RECENT ADVANCES IN OBSTETRICS

To the Editor of THE LANCET

SIR,—In the report of Miss Keren Parkes's paper at the London Association of the Medical Women's Federation published on p. 1465 of your last issue, there are two mis-statements which I feel should be corrected.

(1) Discussing the *Aschheim Zondek* and *Friedman* tests Miss Parkes is quoted as stating that these tests are of use in the diagnosis of intra uterine death of a foetus. I published a small series of cases in which the date of intra uterine death was known (*Lancet* 1935 2, 364). In two the Friedman test was still positive 6 weeks after the foetus died. In

the reports of cases collected from the literature at that time there were four in which a positive result was obtained at even longer intervals the longest being 91 days. A positive result therefore does not definitely establish the fact that the foetus is alive nor does a negative result definitely establish the fact that the foetus is dead. I have obtained negative Friedman reactions in three cases of threatened abortion. In one of these, tests performed before and after the time at which the patient was threatening to abort were positive though a negative result was obtained at the time of threatening. Prof James Young (*Brit med J* 1937 1 9-4) obtained negative pregnancy tests at times when the foetus was alive in over half the cases on which such tests were performed in his habitual abortion series. It is, I feel important that this point should be emphasised, for one is frequently asked to perform a pregnancy test to settle the question as to whether the ovum is alive or dead. The curve of oestrin excretion in the urine drops more rapidly than does the prolactin curve and an oestrin test is therefore of more value but still highly unreliable.

(2) In discussing the treatment of habitual abortion Miss Parkes is reported as advocating the use of "large doses of a substance stimulating luteal activity which was found in the urine of pregnant women marketed as Antutrin S or Progynon. Progynon is not a gonadotropic extract but the standardised preparation of oestrin marketed by Schering Ltd. It should not be used in the treatment of habitual abortion. Miss Parkes's reason for advocating gonadotropic extracts rather than extracts of corpus luteum is that the latter are unfortunately still very expensive. The price of 60 ampoules of progestin, each containing 1 mg (1 rabbit unit) as supplied by a certain firm is 142s. The price of 60 ampoules of the luteinising gonadotropic extract prepared by the same firm is 90s. if the strength of each ampoule is 100 rat units or 180s. if of 500 rat-unit strength which is the strength presumably referred to when Miss Parkes mentions large doses.

I am Sir yours faithfully

P M F BISHOP

Endocrine Clinic, Guy's Hospital S.E. June 19th

THE SEVENTH ENGLISH SPEAKING CONFERENCE ON MATERNITY AND CHILD WELFARE

To the Editor of THE LANCET

SIR.—The report of this conference in THE LANCET of June 12th states that "reprints of a brief history of the child welfare movement" written by me were distributed to the delegates and that this history did not mention the roots of the movement. May I say that my paper which was entitled the Present Position of Maternity and Child Welfare in the English-speaking Countries was not a history, but a brief summary of a large number of documents received by the Conference Committee from the United States, the Dominions and the British Colonies Protectorates and Dependencies describing what is now being done for the welfare of mothers and young children in those countries respectively. The paper began by explaining that the conference was the latest of a long series beginning with the national conference of 1906 which had its origin in a meeting of the British delegates to an international congress in Paris in the preceding year but except for those introductory remarks the paper was given up not to the past but to the present. What your correspondent specifies as missing, the

roots of the movement' are of course well known to students of the movement and are discussed in my book *The Early History of the Infant Welfare Movement*, published in 1933.

I am Sir yours faithfully

G F MCCLEARY

Brockham Green, Botolph Claydon, Suffolk June 10th

ANTIBODIES AGAINST HORMONES

To the Editor of THE LANCET

SIR.—In the leading article on p. 1471 of your last issue there is a statement suggesting that Collip and Anderson introduced the study of antihormones. Over thirty years ago I remember the late Sir Edward Sharpey Schafer stating that Swale Vincent also recently deceased had discovered a type of immunity to internal secretions. Writing on the injection of suprarenal extracts Schafer said concerning Vincent's experiments that "Doses insufficient to cause a fatal result produce immunity to larger doses which would otherwise be fatal and this effect may last a few weeks" (*E A Schafer Text Book of Physiology* Edinburgh and London 1898 vol. i p. 951). As both of these authorities have joined the great majority I feel that justice should be done to them as pioneers. Vincent's paper is I believe in the *Journal of Physiology* (1897 22 111).

I am Sir yours faithfully

J ARGYLL CAMPBELL

National Institute for Medical Research
Hamstead, N.W. June 13th

REGIONAL ILEITIS

To the Editor of THE LANCET

SIR.—Gastro-enterologists and clinicians generally will be interested to know that Charles Combe and William Saunders a fellow of the Royal College of Physicians of London reported a case of terminal or regional ileitis (Crohn Braun type) before the College on July 4th 1896 131 years ago! The title of the report was A singular case of Stricture and Thickening of the Ileum.

The patient was William Payne George Esq. of a very nervous and delicate habit at necropsy (Monday Feb 10th 1896) it was found that the stomach, duodenum, the jejunum and the upper part of the ileum, liver, pancreas, spleen, and kidneys were in a natural and sound state. The lower part of the ileum as far as the colon was contracted for the space of three feet to the size of a turkey's quill. (*Medical Transactions published by the College of Physicians in London*, iv 16-21 1813 London.)

John Abercrombie (1780-1844) discusses pathologic states of the ileum and reports cases of terminal ileitis (Combe Saunders Crohn Braun type). On p. 263 of John Abercrombie's book *Pathological and Practical Researches on Diseases of the Stomach, the Intestinal Canal, the Liver and other Viscera of the Abdomen* (Edinburgh edition pp. 258-263 Waugh and Innes 1828 report Case (11) he tells of a girl, aged 13 about a year before her death began to be affected with pain of the abdomen and frequent vomiting. The lower end of the ileum to the extent of about eighteen inches was distended thickened in its coats externally of a reddish colour and internally covered by numerous well-defined ulcers varying in size from the diameter of a split pea to that of a suppurate. The lungs and all other viscera were healthy.

I am Sir yours faithfully

HYMAN J GOLDBSTEIN

Camden, New Jersey U.S.A. May 27th.

INDIVIDUAL PSYCHOLOGY

To the Editor of THE LANCET

SIR,—In consequence of the sudden death of Prof Adler at Aberdeen on May 28th it has become necessary to remodel the programme of lectures and vacation courses in individual psychology arranged for this summer. Dr Alexandra Adler, Prof. Adler's daughter and herself a brilliant exponent of individual psychology, has very courageously undertaken to carry out, as far as possible, the programme arranged for her father. Certain adjustments and cancellations have, however, been necessary and the programme now is as follows—

Lecture course, non resident, in the B.M.A. Hall, Edinburgh	June 21st–July 2nd
Vacation course at University Hall, Liverpool	July 7th–12th
Vacation course at Bishop Otter College, Chichester, Sussex	July 17th–26th

We, the undersigned, being convinced of the great value of individual psychology in throwing light on the fundamental problems of human life in an age of great perplexity, would appeal to the medical and teaching professions, and the Church and parents especially, for as large a measure of support as possible for these courses. This would be the finest tribute that could be paid to the memory of a great benefactor of the human race, who devoted his life to freeing men and women from the burden of misconception and misunderstanding which lies so heavily upon the human family.

We wish to take this opportunity of thanking the University and City of Aberdeen for having done everything in their power to honour the memory of Prof. Adler by arranging an official funeral service in the chapel of King's College on June 2nd.

We are, Sir, yours faithfully,

NINA HAMILTON AND BRANDON,

ALBERT LIVERPOOL,

ISABEL MARGESSON,

ALFRED BEIT,

PHYLLIS BOTTOME,

IAN L. FLEMING,

ELIZABETH HOARE,

(Chairman Adler Vacation Courses)

June 21st

METHODS OF DESTROYING BED-BUGS

To the Editor of THE LANCET

SIR,—Fumigation against bed bugs needs experts to do it. There are millions of bug infested houses which are unlikely to be fumigated for years, and it would be an advantage if we could suggest ways in which the inhabitants could at least keep down the bug population in the meantime. The only methods they can use are contact insecticides, and, as I suggested in my letter of June 5th, dilute methylated spirit may be useful in this way. While fully appreciating the improvements which Ashmore and McKenny Hughes have described in their article and recent letter I see no reason why the victims should have to wait until all local authorities have been persuaded to use 'heavy naphtha'.

I cannot understand why Ashmore and McKenny Hughes should say (*The Lancet*, June 12th) that "contact insecticides are helpful in dealing with a light infestation, but in our opinion a heavy infestation can only be dealt with successfully by a fumigation process." Surely any inefficient process—even soap and hot water—will do much damage in a really heavy infestation and so produce a light one. It is the light infestations (perhaps the remains of heavy ones) which are difficult to eradicate and

efficient fumigation which penetrates every crevice is the best method. Fortunately a light infestation causes less suffering in the house.

Contact insecticides can be used unknown to the neighbours, who always realise when fumigation is being carried out. The odour of heavy naphtha may be "not unpleasant," but the neighbours may be! There is still a stigma attached to having a bug infested house, even when it is a case of the "pot and the kettle."

I am, Sir, yours faithfully,

KENNETH MELLANBY

Sorby Research Laboratory, Sheffield
University, June 17th

INFECTION THROUGH OLFACTORY MUCOSA

To the Editor of THE LANCET

SIR,—In reply to Dr Rake's request for further information (*The Lancet*, June 12th) all his difficulties are due to a slight acidity of the solutions he employs. Prussian blue is not formed when iron ammonium citrate and potassium ferrocyanide are mixed in faintly alkaline solutions. We still have some such solution made up July 4th, 1933, continuously exposed to light, which is crystal clear and with only slight deposit. It still contains practically all the ingredients in true solution, as shown by the amount of deposit on acidification.

Although Dr Rake's mixture contained granules it also contained some true solution, and the latter would naturally permeate easily, as demonstrated by Le Gros Clark. I am still unconvinced with regard to the passage of pneumococci from the nose to the subarachnoid space within two minutes, and I hope Dr Rake will continue his researches in order to substantiate this very important statement.

I am, Sir, yours faithfully,

F. A. PICKWORTH,

Director, City and University of Birmingham Joint
June 21st Board of Research for Mental Disease

PRESENTATION TO SIR FREDERICK HOBDAI

To the Editor of THE LANCET

SIR,—An appeal has been launched for funds for the purpose of making a presentation to Sir Frederick Hobday on his retirement from the position of principal and dean of the Royal Veterinary College, as a mark of appreciation of his services to veterinary science in general and the Royal Veterinary College in particular.

Sir Frederick has intimated his wish to devote the sum raised to the furtherance of the collaboration between the medical and veterinary branches of medicine in their mutual crusade against the diseases of animals which are common to, or communicable between, animals and man. Since the preliminary letters were issued the method of carrying this out has been considered by Sir Frederick and he desires to found a research scholarship fund in order to encourage research by veterinary and medical men in connexion with the diseases of animals and man. It is hoped that this will further the liaison between the two professions and be of great benefit to the science of medicine in its widest sense. The fund is to be called the Hobday Research Endowment Fund.

The committee feel that these details, and particularly the idea itself, will be of the greatest interest to members of the veterinary and medical professions. It is hoped that amongst his numerous friends and well-wishers a substantial sum will be raised which will be sufficient to enable this scheme to be carried out adequately.

I am, Sir, yours faithfully,

L. D. T. COX, Hon. Secretary

St Ermins Westminster SW June 19th

BRITISH ASSOCIATION OF RADIOLOGISTS SKINNER LECTURE

To the Editor of THE LANCET

SIR.—In the report of this lecture which appeared in your last issue the necessary compression has resulted in ambiguity with regard to some of the opinions expressed. I should be grateful if you would allow me a little of your space to clarify matters.

(1) The report states that I advocated the use of X rays after radical surgery and that I also consider surgical ablation valuable because of its psychological effect on patients. What I said was as follows

For practical purposes in this country we must assume that the primary growth will be got rid of by operation or by radium implantation. The latter saves the patient from what is rather unattractively referred to as mutilation and in the case of some women it is psychologically very desirable to avoid ablation of the breast. Others of a different mentality prefer as they say to get it over and done with; actual removal gives them a greater sense of security. I prefer surgical removal if it is not too drastic. An axilla in which the glands are not palpable is best left alone. If there is microscopic invasion, it can be dealt with by radiation.

(2) The report states that I do not consider Todd's treatment suitable for hospital cases but that I recommend it where there is metastasis in bone. I said that I did not consider Todd's method suitable

for use as a routine procedure in general hospitals, but reserved it for otherwise desperate cases of generalised metastasis in bone where concentrated X ray dosage was obviously impossible. For the single or at any rate non multiple, metastasis deep X ray treatment in the usually understood sense is certainly indicated—spontaneous fractures may be caused to unite and the patient restored to active life for months or even years.

I am Sir yours faithfully

F. HERNIMAN-JOHNSON

Brook street W., June 2nd.

THE FUTURE OF OBSTETRIC PRACTICE.—Dr ELWIN NASH writes. I notice that your report of my paper (published on p. 1285 of your issue of May 20th) states that in my district the average number of deliveries attended by doctors was six a year. Thus I was very careful to record was the result of a questionnaire sent out a few years ago to a large number of towns and represents the average number of confinements attended by medical practitioners outside an institution. It must be realised that there are still a number of cases attended by general practitioners in nursing homes of varying grades. Had I been present at the meeting this might not have got into print in this particular form. Unfortunately I was at the time a patient in hospital as the result of a difference of opinion over the right of way with a motor-car.

PANEL AND CONTRACT PRACTICE

The Essex Public Medical Service

The provision of medical treatment on a prepayment basis is becoming increasingly popular as is shown by the rapid growth of hospital contributory schemes, and the steady progress made in the establishment of public medical services for the treatment of persons who though not covered by the national health insurance system are in much the same economic class as the insured. At the second annual conference of public medical services last November it was stated that the number of services now working was 63 with approximately 404,000 subscribers and the organisation of such services has become a definite part of the activities of the British Medical Association. The thirteenth annual report of the Essex Public Medical Service recently published gives some particulars of the working of this method of providing medical care on a voluntary insurance basis. In 1936 the number of subscribers was 31,085 (adults 16,060 children 14,485) and the number of practitioners 274 of whom 30 joined during the year. The subscriptions amounted to £21,481 and the payments to doctors to £17,128, the largest amount collected for any one practice being £1283. The sum of £3467 was expended on collectors' commission and expenses and other administrative charges cost £1463. We note that among the subscribers the proportion of children to adults is becoming smaller. At one time it was nearly two to one but it has been diminishing year by year until in 1936 the adults outnumbered the children by 2115. This is attributed to the declining birth rate which as the Minister of Health pointed out in the House of Commons last week, will probably reduce the number of children attending public elementary schools by about a million within the next 15 years.

Understudying the Dentist the Sequel

Readers will recall the appeal of a practitioner who was disallowed his fee of 10s for attendance

late at night, on a bleeding tooth-socket following extraction. The Minister allowed the appeal not on any ground put forward by the practitioner but on the technical ground that the insurance committee had not obtained a formal expression of opinion from the local medical committee that the service rendered was within the scope of medical benefit. That has now been done and the proper tribunal has stated that the service was within the scope. The Minister being informed of this remarked in effect that it was now too late. The matter having been dealt with by the insurance committee and adjudicated upon by him on appeal was now *res judicata* and he was therefore precluded from taking any cognisance of the report now submitted under Regulation 46 (4). The medical benefit subcommittee not unnaturally are displeased about it. They have caused the Minister to be informed of their opinion that in a case of lapse in procedure not of substance it is desirable that an opportunity of rectifying the procedure should be afforded rather than that the appeal should be allowed on the ground of that lapse alone. Accepting the position as now irremediable the insurance committee decided to return the 10s to the insured person from their general purposes fund subject of course to the Minister's consent. Dr V. is therefore not out of pocket for his successful effort to focus attention on the relation of dental work to the medical practitioner's capitation fee.

¹ *Lancet* Feb. 6th p. 34

CORONATION GIFTS FOR HOSPITALS.—The trustees of the Albert Lever Benevolent Fund are allocating £10,000 to be divided among twenty selected hospitals as Coronation gifts. Among the institutions which will receive them are St. George's Hospital, the Royal Free Hospital, Westminster Hospital, and the Chelsea Hospital for Women.

OBITUARY

SIR SQUIRE SPRIGGE

1860-1937

EDITOR OF "THE LANCET"

Sir Squire Sprigge died at noon on Thursday, June 17th. He was at the office as usual up to Coronation Day, and his death—from pulmonary embolism following an operation—came unexpectedly.

"For the convenience of *The Lancet* sexton," as he put it, he had left among his papers an outline of his life, but it was a bare outline.

BOYHOOD AND PURSUITS

Samuel Squire Sprigge was born on June 22nd, 1860 at Watton, Norfolk, where his father, Squire Sprigge, was a doctor and small landowner. His father, after taking distinction in surgery, had settled in Norfolk and became widely beloved as a general practitioner who was interested not only in the maladies but in the lives of his patients. The family was indigenous in East Anglia for the elder Squire was the eleventh child and youngest son of the Rev James Sprigge, D.C.L., rector of Brockley, Suffolk, a family living, and his wife was the daughter of John Jackson, solicitor, of Dutton Hill, Bramtree, and Bury St Edmunds. His eldest son, Samuel Squire, had his early schooling with the Rev J. R. Pilling at East Dereham before going to Uppingham and Caius College, Cambridge, where many of his mother's family had been before him. At Uppingham he came under the influence of Thring as head master, and in the Lower VI he met G. Herbert Thring with whom his friendship was lifelong. "Neither of us," his friend admits, "was a hard worker, but Sprigge always showed a very quick power of grasping and learning." He could not be kept there long enough to get into the highest form or into the cricket eleven or Rugby XV, but he was a sound player at both, alert in his movements and "terribly fast on his legs for so small a man"—a quality that later brought him success as a fencer. On his father's death in 1877 his mother moved to Bury St Edmunds where Squire played regularly for the city cricket club and was well known in the football field, he played for Suffolk on many occasions, and later for Norfolk and Middlesex. Among his papers is a newspaper account of a lively association match at West Ham Park between Middlesex and the Norfolk County Club in which it is recorded that "Sprigge at centre forward was enabled to place the first goal of the game to Norfolk."

From Cambridge he entered St George's Hospital or "The Corner," as it was affectionately termed, and was popular as a shrewd student who could sum up a situation in six witty words. He was always immaculately dressed and his charm of manner endeared him to everybody although he kept company mostly with the Cambridge men. For two or three years he lodged with Thring, and their rooms were the centre for St George's men to collect. There was a good hand of whist and a mild gamble at loo. The party often included Hewitt Bolton, Sisler, Joseph Farrer, John Hunter and Weldon, and after tea they might go on and dine at Victoria Station. Sprigge clerked for Timothy Holmes, and their sparring was a source of delight at Thursday consultations. His memory was more than adequate to give him a profound theoretical knowledge of medicine and it was by virtue of this rather than of

clinical acumen that he faced examiners who, it is believed, were sometimes a little overawed by his knowledge.

It was at this time Sprigge began to write stories and cultivate the arts. His taste in books became wide, but he liked a good plot and "took great joy in the perfection of a gem like short story." He knew Dickens almost by heart, and enjoyed Wilkie Collins, Gaboriau, Sterne, Balzac, Henry James, de Maupassant, and in due course Edgar Wallace (at his best). Likewise he cared for good food, having high standards of simplicity, and knew well the points of wine, especially claret and burgundy. These tastes went with an expert's interest in moths and butterflies—to the end of his life "he used to point like a dog at the sight of an interesting looking one"—and later a love of gardens. His town garden was made as much like a country garden as possible. He was especially proud of his herbaceous border. Appreciation of colour and form led to his becoming, in the last twenty years, a keen amateur of water colour painting, and he was at all times an informed critic of architecture. In early days at the Savile Club his chief associates were Edmund Gosse and William Hunt the historian, and Rudyard Kipling, Rider Haggard, Anthony Hope Hawkins, Max Beerholm, and William Rothenstein were to become his friends.

INTRODUCTION TO JOURNALISM

After graduating in medicine at Cambridge in 1887 he made no bid for a resident post at St George's, of which there were then only four in all, but went on to the West London Hospital and Brompton where he worked under Percy Kidd, also an old Uppingham boy, for whom he had a great admiration. He did some medical reviewing and medical writing, mostly in lay papers and anonymously. He also wrote a good many short stories in popular publications, but had formed no plans for the future when two very different openings presented themselves, and it happened that he could avail himself of both. One was the post of secretary to Sir Russell Reynolds, afterwards president of the Royal College of Physicians of London, whom he assisted in the preparation of literary work which was unfortunately never completed. His experience at this time behind the scenes in a famous consulting room gave him, however, the insight into the attitude of mind of the practitioner as he goes about his work, which later found expression in a remarkable chapter in "Physic and Fiction" (1922) entitled "the pathologist in the street."

The other opening came from an introduction to Sir Walter Besant, the acquaintance soon developing into a warm friendship, and he became secretary to the Society of Authors, working there in the afternoons and with Sir Russell Reynolds in the mornings. Together Besant and Sprigge produced two pamphlets, now out of print on the cost of production and the methods of publishing and these formed the basis of the society's programme. Sprigge's force and ability combined with Besant's burning zeal gave the society a start which it has never lost. The novelist and his junior represented the society at the Chicago Exhibition in 1893 and were both freely caricatured in the American papers. It was in Chicago that Sprigge received the telegram which determined the course of his life. Mr T. H. Wabler who had noticed his writings offered him a responsible



Guere Guage

post in the editorial room of *The Lancet*, and he returned at once to London to begin work which he never laid down. But having resigned the secretaryship he long remained a leading spirit in the counsels of the authors society and in 1911 when the Copyright Bill was being promoted he was elected chairman in succession to Maurice Hewlett. In December of that year he presided at a dinner at the Criterion to celebrate the passing of a Bill described by Mr Conyns Carr as the largest instalment of justice which Parliament had ever given to English literature. The presence at this dinner of Sir Frederick Macmillan was evidence said the chairman that the Society of Authors could no longer be described as a ring to fight the publishers. It was an earlier stage of this Bill which led to Sprigge being interviewed by the *Pall Mall* on an event which evidently gave him pleasure for he wrote "my first interview" on a cutting from that journal.

EARLY DAYS AT THE OFFICE

After a short probationary period Sprigge became assistant editor of *The Lancet* which was then under the joint control of Mr T H Wakley F.R.C.S. and his son Dr Thomas Wakley Jun son and grandson respectively of the founder of the paper. They were advised by Surgeon-General Jeffery Marston Dr Sydney Coupland and Dr James City Glover and Sprigge has publicly recognised the excellence of the early training he got from these advisers and from the younger Wakley his immediate chief. In 1907 the senior editor died the junior surviving him by only two years, and in 1909 at the age of 43 Sprigge was promoted to sole editorship and was free to develop his special interests. One of these was medical education. From the moment he entered the office he began to attend the sessions of the General Medical Council, and made a daily study of the regulations of universities and colleges in regard to the training of students. Foremost in his mind was always the training of the student on broad cultural lines and the reform of the curriculum so as to avoid overburdening him with detail. He began as was his wont to expound his ideas to a trusted secretary waiting for an occasional comment to which he would reply with further long expostions. This was always the way in which he worked out his ideas, and then he would sit down and write rapidly and unceasingly page after page often racing up and down the tortuous stairs of the old office when a fresh idea came into his mind which must be set down without delay. Some of these early thoughts were crystallised in the address he gave at the opening session of St. George's Hospital medical school in 1910 in which he discussed on the award of prizes and scholarships. These had their place as an incentive and no more. The modern conception of medicine was that all men in whatever walk of life they were practising should see their life as one long education. He protested against the multiplicity of examinations and their intricacy and pleaded for the wider endowment of teaching. Only short-sightedness and a false economy encouraged students freely with exhibitions and scholarships while making scanty provision for those who taught them. What was needed he said voicing an opinion now but not then generally held was professional chairs for the teachers and he appealed to wealthy and generous persons to found these chairs. "What right," he asked, "have we to expect that the highly endowed student will receive adequate instruction if we fail to endow his masters?" A paper which he read in Paris at the First International Congress of the Medical Press in 1900 set out

what became the policy of *The Lancet* towards medical education. This took more precise form in a modest volume entitled *Some Considerations of Medical Education* which appeared in 1910. The main theme of this book is that while the education of the medical student in this country will bear favourable comparison with that in any other country it is an anomalous state of affairs that the diploma giving permission to practise is in no sense an accurate measure of the soundness of his training. Another series of anonymous articles on the relations of medicine to the public was also republished in book form. These articles were reconstructed as a thesis for a belated M.D. degree at Cambridge.

Sprigge had as his first assistant at *The Lancet* Dr H. P. Chalmers, a historian and scholar, their collaboration though congenial lasted only two years in that form. In 1911 Dr N. Gerald Horner now editor of the *British Medical Journal* joined the staff but here again the association was short for on the outbreak of war in 1914 Dr Horner went on active service and the editor brought out the journal single-handed until Dr Egbert Morland came to the office in 1915. The war reduced *The Lancet* to small proportions but care was taken to use its pages to the best advantage and Sprigge was in constant and intimate contact with the Army medical authorities. He found time also to make a useful contribution of his own to the care of those in distress for the Belgian Doctors and Pharmacists Relief Fund, started in 1914 was run from *The Lancet* office with Dr Harold Des Voeux as treasurer and administrator and the editor as secretary. Over £25,000 was collected—much of it through the help of Sir Dawson Williams and the British Medical Association—and large quantities of clothing were distributed while hospitality of all sorts was secured and professional openings were found for refugee doctors unable to serve with the Forces.

Some of his later outside activities should receive mention here. Having with expert collaborators done much in *The Conduct of Medical Practice* (1927) to instruct medical men and women how to protect themselves from unjust attack and how to avoid giving occasion for attack he was invited to become a vice president of the London and Counties Medical Protection Society. Later he became a trustee of the society's reserve fund placing at the disposal of its advisers his exceptional knowledge of affairs. His interest in education naturally extended to the public school which attracts so many sons of medical men and for twelve years he was a member of the council of Epsom College doing much both personally and through the medium of *The Lancet* to promote the interests of its Royal Medical Foundation and the improvement of its school curriculum. When the Coal Smoke Abatement Society initiated its first serious inquiry into atmospheric pollution Sprigge put *The Lancet* laboratories at its disposal and published its reports when no scientific journal was willing to take them. He was a vice president of the London and National Society for Women's Service and took a special part in the development of its junior council often attending their meetings and always standing their friend.

In 1921 Sprigge was elected F.R.C.S. Eng. and in the same year received a knighthood. In 1928 he went to the United States to deliver the annual Hunterian lecture of the American College of Surgeons and while there was made a fellow of the College. *The Lancet* had already profited much from his many visits to the Continent and at the instance of the

proprietors he visited a group of the best known American and Canadian universities, investigating their medical curricula with the object of making it easier for medicine to coöperate across the Atlantic. A report of these visits was published as a special supplement of *The Lancet* and the report and lecture are the only contributions which have ever appeared in the paper under his own name. It was only in the index that his authorship of the notes "From a Chronicler" (December, 1936) was revealed.

In 1927 he was elected F R C P Lond

TWO CENTENARIES

Soon after Sprigge joined the office he was commissioned by the Wakleys to write a history of the founder of *The Lancet* and of the early work of the paper. In Sprigge's hands this developed into a connected story of *The Life and Times of Thomas Wakley*, who was born just a hundred years before this memoir of him. The biography in its serial form occupied his week ends for many months, each chapter being revised and completed in the train to and from Aldeburgh. The second centenary of which Sprigge was the chronicler was that of the foundation of the journal itself, nearly 30 years later he retold the story of medical progress in Wakley's time and brought the centenary issue of *The Lancet* up to date in what might be truly described as the life and times of Squire Sprigge. At the centenary dinner, held in November, 1923, addressing a gathering which included most of the leaders of the medical profession, he assured them that "the past outrageous energies can never be repeated by us the violence of past days is gone, but the desire for the right and the zeal to achieve it remain as forcible as they were a hundred years ago." And he went on to describe *The Lancet* as a friend made paper, relying on the good offices of its supporters who read each other's wisdom and clarify or correct each other's views. "I also," he added, "am a friend made man. Through school, college, and hospital associations I have exacted levies from friends and, as time went on, enlarging environment gave me enlarging opportunities for such exactions. It is to others I owe what you have accorded to me. Any measure of success which has been obtained has been in return for labours of love. It is they who have to discharge a dull routine and face distasteful duties whose devotion is really admirable. I have enjoyed myself. Medicine may be only one section of the world's activities but it is an ever developing and all permeating one. It has been my delightful duty to record the phases and ramifications of medicine as they are produced and as they are justified by the workers themselves." This second centenary came after the ownership of the journal had passed to Messrs Hodder and Stoughton, but the continuity of policy was evident when Sir Ernest Hodder Williams, then the chairman, recalled at the dinner a pledge made by the new proprietors to maintain the honoured name of the paper "even though it should mean—as in the case of Wakley—having our houses burned down and gutted, even if it means we have to fight half a dozen libel actions in as many years."

DEPARTMENTAL CONTACTS

The successful conduct of any journal depends on the harmonious working of the several parts—the office, the printing house, the advertisement department. It was Sprigge's good fortune, for which he was himself largely responsible, to be associated over long years with departmental chiefs on terms of

intimacy. Until the move from the old house in Bedford street across the Strand to the Adelphi the composing room, three floors above the editorial room, was ruled throughout his time by two men, father and son. The latter, who is still "the printer," writes "At the period when the typesetting of *The Lancet* was done in our own offices Sir Squire was exceedingly popular with the readers and compositors, who to a man would work with great enthusiasm when a big article arrived barely in time to be inserted in the current issue (at this time the type was hand set). Sir Squire deeply appreciated this help, and in return took a personal interest in the staff and remembered the varied characteristics of the men, whose future careers he took great pleasure in discussing for years afterwards. Should further advice be needed in cases of illness he would gladly make the necessary arrangements. Also at Christmas he would devote a sum of money to purchase a present for each man, consisting of a pipe, tobacco or cigarettes. The juniors, whose job it was to carry copy and proofs to and from the editor and the printing department, found that he was never too busy to enjoy a joke. For instance, on a certain Boat Race day the messenger wore a large Oxford favour in his coat when he carried proofs down to the editor. 'I can't be bothered with you to day,' said he, with twinkling eye, 'you must hand them to Dr Cholmeley (an Oxford graduate)'. In the early part of the war he had to work without the aid of a sub editor, but the printer's readers came to the rescue and helped him to put the copy in proper order. Altogether his was a great and lovable personality, and he found no difficulty in arousing the interest and enthusiasm of those fortunate enough to work with him."

Here are a few impressions from a member of the office staff who "had the pleasure of knowing Sir Squire during 45 years at *The Lancet* office. From his early start he endeared himself to all, being ever willing to help and advise. In fact he never tired of doing good. Anecdotes about his resource are many, but one must suffice. On one occasion a man who called to subpoena him to give evidence, being told he had not arrived, announced a determination to wait outside for him. Sir Squire, wishing to get away, sent the office boy to buy a cap, put it on, turned his coat collar up, and walked out past the waiting man, leaving a truthful message that he had gone to an inebriate's home (of which a friend was superintendent).—Sir Squire Sprigge was both good and generous. We all loved him and we shall sorely miss him."

"He was kindness personified," writes the Manager. "It will always be a cherished thought that I was privileged to have been associated with him for seventeen years. During the whole of this period, and particularly the last eight years, there was never a difficulty, either of a business or domestic nature, in which I did not know I could ask his counsel and readily receive the guidance needed to surmount the obstacle. In my absence from the office on holidays his help was constantly available in business matters. His great human kindness and foresight were always available for the solution of problems, large or small. The charm of his personality affected senior and junior alike, and especially those who had suffered loss or misfortune were helped by his presence and by his manner."

THE EDITOR

An editor is necessarily a journalist, but the two rôles are not the same. Sprigge was less modern

in technique than in policy. His prose was leisurely and unemphatic; at its best it was rich and charming but he did not strive to put his meaning into words of one syllable and he sometimes deliberately weakened his argument by a qualifying phrase that sounded like an afterthought. He was content, in fact, to develop his ideas in dignified English with reservations in parentheses whereas the journalist of to-day conscious that the world is full of distractions seeks first to engage and keep his readers' attention. Characteristically Sprigge despised the tricks of his trade—the attempts to catch eye or ear. He did not much care whether a page looked formidable or readable. He seldom baited his articles with ingenious headings, but liked them to have plain descriptive titles. In a word, he was not at heart a propagandist. Equally fundamental was his disinclination to alter argument or narrative for the sake of a good phrase or a witticism which meant that his professional essays were less entertaining in type than they were in draft. Similarly as an editor he never attacked for the pleasure of attacking. When a junior suggested gloomily that the function of a leading article was surely to lead he replied accurately enough that the word leader merely indicated an article in which the lines are loaded or spaced.

It has been said that he was a typical English gentleman in his shyness of showing personal emotion or of touching in conversation upon serious problems.

The emotion was there however carefully concealed and his truly tender concern for the interests of others sometimes broke through his self-control. The same applies to his behaviour as an editor. Though he took pride in the influence that *The Lancet* might exert on medical affairs and was anxious to exert it sanely and wisely he felt no temptation to go out to look for windmills on which he could demonstrate his skill and thus enliven his pages. But his feelings on medical and public affairs were none the less real because he sought to suppress them, and the indignations or sympathies of his liberal mind occasionally found forcible expression.

In selecting material for publication he preferred the contributions of men who worked in an environment of criticism at hospital or elsewhere. But his personal contacts were not confined to the conventionally successful and he knew well that good sense could be spoken in strange tongues. He wrote once to an assistant: "You are too forthright. Boundaries do not always bound boasters; do not always lie the third-rate person sometimes produces second-rate stuff. He showed perspicacity in seeing what people were fit for and in not attempting to make them do more. He once said: 'Never take away a man's vanity. If you do that he's done for'."

He disliked arm-chair medicine but his general outlook did not conform with the definition of an editor as "a man who keeps things out of a newspaper." Where a member of the profession had earned a right to be heard he would often take great pains that he should be heard effectively. If it was folly to insist on speaking to the editor himself over the telephone—which instrument he never learnt to control—it was very wise to call and secure recognition as a person rather than a signature. As an editor he had catholic tastes. If he did not interpret free speech as meaning that the columns of *The Lancet* were open at all times to letters on controversial subjects it was because he knew how hard it may be to deny the claims of interested parties to replies that lead nowhere. Ultimately the

editor must decide what he wants to put in his paper and as an editor Sprigge's highest qualification was that he knew his own world—and also much of the world outside it. He was a familiar and a much beloved figure at the United University Club as well as at the Athenæum and was often consulted about new developments while they were being planned.

It is useful that an editor should have private knowledge of events but here in later years, he resembled C. P. Scott of the *Manchester Guardian* who occasionally omitted to mention his special knowledge until it was too late for his staff to make use of it. What he did provide all the time however was an eye for errors large or small, and a judgment based on knowledge of men and it was a mature and sagacious judgment. Like Scott again he had a low opinion of his readers' capacity for appreciating irony but in other respects he felt himself representative of the plain medical man faced with advancing science. "If I can understand this," he said, "so can any of our readers." He strongly objected to any suggestion that special fare should be provided for general practitioners as a class apart. His journal was for the medical profession, all of whom had the same basic training. At the same time he tried to prevent its becoming what he called too pathological. His highest praise when his advance copy of *The Lancet* arrived on Thursdays and he exchanged cigarettes with the printer—an invariable custom—at his morning visit was that its contents were all over the place. If this favourable verdict was sometimes associated with regret at the inclusion of material that he personally found unreadable the regret remained unspoken. For his modesty led him to drive his team with the lightest of reins and those who worked with him will remember that he gave them all the freedom they wanted, criticising rarely and holding himself responsible only when things went wrong. In recent years the inside medical staff of *The Lancet* has consisted of the editor and four assistants who shared one large room. Though their ages ranged from 26 to 76 sectional division of the work was avoided: each was encouraged to tackle any aspect of it and submit to robust comment on the results being in turn expected to use his knowledge in criticism of the efforts of his colleagues. The fact that the chief did not pursue consistency in detail made it easier for him to delegate tasks to others. The tradition he established was that all were working for *The Lancet* not for the editor.

But these apparently simple solutions came from a complex mind. He liked to follow custom but did not readily remember rules even when he had made them himself. He was no enthusiast for policies. He was true to national type in his opportunistic outlook and ability to compromise. The opportunism however was that of a philosopher and the compromise those of a diplomat. He often followed the classical advice to give a decision without the reasons for it. Nevertheless his office was a school of the diplomacy of which he was a master. His anger was not always righteous but his associates learned to know that irritability was sometimes assumed so as to put an artificial end to discussion that tended to be too protracted. Moreover he usually managed to make it appear impersonal directing it at objects and subjects rather than at persons. His mood could change as quickly as April weather. But sly and cheerful blunt or bland he had an uncommon air of breeding and no one seeing his fine and fearless face could doubt either his wisdom or his power to manage others.

THE TRUSTEE

In 1894 Sprigge succeeded to a small family property in Buckinghamshire, and in the following year he married Beatrice, daughter of the late Sir Charles Moss, chief justice of Ontario. There are two children of this marriage, Mr Cecil Sprigge (financial editor of the *Manchester Guardian*) and Mrs Mark Napier (Elizabeth Sprigge the novelist), and five grandchildren. In 1905 he married Ethel, daughter of the late Major Charles Jones, and she survives him. His second daughter, Annabel, is a sculptor.

He was thus the centre of a large family circle, going down to the third generation, but he was also trustee for many outside it, and trusteeship of one kind and another made up a large part of his life. He held in trust the assets (not only material) of many who had no claim on him save that of a common profession, college, or school, for the impulse to confide in him was widely felt. So sure was his touch, so wise his discretion, that no awkwardness or embarrassment came to mar future relations. He did not ask sympathy in return, indeed he would mostly have resented it. He was taciturn about his own troubles and worries. But his hand was always ready to be outstretched, and his purse to be opened, to friends or even acquaintances in difficulties. Chivalrous is the word used of him by some German friends in whose house he often spent his summer holidays. All his ingenuity was often taxed to find means by which he could avoid being thanked.

To the casual observer he may not have appeared a patient man, but in fact one of his outstanding qualities was his patience—patience with the follies of a large number of men and women who came to him for help and advice, but particularly patience with the vagaries of the young. Responsibility had been early thrust upon him, for he was only at the end of his school days when his father died and he was left as eldest son of a young family. The sense of family obligations was, and remained, imperious in him. He viewed the small estate he later inherited as a trust vested in the head of the family, carrying with it the privilege and duty of active interest in the well being of a considerable number of people, young and old. No man, however, could have been freer from the reproach of laying down duties for others, and though he might often have imposed his will upon the young he preferred to offer his help in whatever course they should choose, even (or more particularly) if it were not the course which he would have had them pursue. Indeed he respected personal independence to the point of appearing sometimes to abdicate authority. But he had usually chosen his ground well, and by allowing free play to others secured all the more surely their affection, and, at the really critical point, their coöperation.

Whatever he undertook to do, whether it was a task in the public service, a matter of necessary private business, or a study for delight or ornament, he performed with precision and energy yet with no inhuman airs of self dedication. As a well balanced human being with a fine taste in intellectual principles and in conduct he was a reverent inquirer into meanings rather than a confident assessor of opinions about first and last things. He had been born and brought up a country lad, and yet his lot was to work for half a century in the centre of a great town and to become a loyal and even a passionate Londoner. Always in the back of his mind he had the broad fields and the trees and a village church like that where he was laid to rest last Saturday. A single wreath sent

anonymously bore the words "In long memory of Sir Squire Sprigge. To know him was to gain strength."

IMPRESSIONS

Some idea of the effect of Squire Sprigge on his contemporaries and juniors may be gained from the selection of personal tributes which follows.

Sir Charles Sherrington—To contribute a few sentences in appreciation of Squire Sprigge, my friend and old fellow collegian, to your columns, which were so long his, comes, although it has its sadness, as in some sort a satisfaction. It may seem odd but my memory's picture of him at Cambridge mostly recalls a figure, characteristically well dressed, bound for the football field or the tennis courts, and, even in flannels, something of a Beau Brummel—but in the field or court a formidable hard bitten player. He was a general favourite with us all, witty and companionable, one who never seemed to have any particular work to do.

Meeting him later in London after he had joined his hospital I found a talk with him always an intriguing change from what I met elsewhere. I fancy he already moved in circles where the literary work of the day with its artistic and its business vicissitudes was constantly uppermost. At that time he would seem to me so detached from the interests of a medical school that I supposed he would drift off altogether. Later still I met him at a friend's house in Toronto, and Toronto seemed to him almost a second home.

I cannot trust my memory as to how long it is that he had been identified with the editorial work on *The Lancet*, but almost from the very earliest of my own personal contacts with the editorial office it was with Sprigge that my contacts had to do, always to find myself impressed, and indeed charmed by his ability, his geniality, and his helpfulness. In more recent years a scene which remains vividly to me is the commemoration banquet organised by him in celebration of *The Lancet's* centenary. All the world was represented. The speeches went on well beyond midnight. Everybody felt it a great success, and the presiding spirit throughout was personified in Sprigge.

Others will pay tribute to other sides of his versatile personality than those it was my privilege to know. To me his memory remains as that of a life long friend, whose gifts and character were such as often to raise in me the wish that good fortune might yet more than it did throw me in the way of his society and fellowship.

Dr Alfred Cox—It needs a great effort to imagine *The Lancet* without Sprigge, for, as must be the case with all great editors, he impressed his personality on every page of it. The sense of loss that our profession will feel on hearing of his death will be specially felt by those of us who knew him in his younger days when he was such a prominent personage in literary as well as in medical circles.

I had my first contact with him in the late 'nineties, when as an ardent medical politician I was much concerned with the abuses of medical contract practice. *The Lancet* had commissioned Mr Adolphe Smith to visit various parts of the country and write a series of articles on "The Battle of the Clubs," in which the sordid horrors of that branch of practice were exposed in a masterly fashion worthy of the best *Lancet* traditions. Sprigge wrote to me and asked me to help Smith in his investigations on Tyneside, which I willingly did. The effect of those articles was

profound not only on the outlook of many active doctors of my generation but on the subsequent policy of the British Medical Association. Occasional correspondence with Sprigge followed but it was not until 1900 that I first met him on a memorable occasion. At that time there was much dissatisfaction with the inertia of the B.M.A. with regard to the interests of the general practitioner. A body of us got together and a small deputation of which I was one was sent to ask Sprigge if *The Lancet* would put itself at the head of a new body and become its official organ. The interview was specially memorable to me because Sprigge, after listening to us very sympathetically, took the line I had persistently advocated. He said it would be a great mistake to do anything to weaken the one great organisation the profession had and told us we could come back if we liked, but we must then be in a position to convince ourselves and him that it was impossible to get the B.M.A. to do what we wanted. The result was well known. His attitude then as I found later was characteristic of the man. Proud as he was of his journal and always anxious to extend its influence, he always tried to take the long view of what was best for the profession as a whole. Many times in my official career I sought his advice and help and never in vain. He was sometimes critical of the policy we were pursuing and said so quite plainly in private at any rate. But he was ready to back us up with all his power when he knew we were right and he occasionally took considerable risks in doing so. Many a time he used his great personal influence behind the scenes, with prominent public men in order to further our objects. This was notably so during the Insurance Act fight and in connexion with the recruiting of doctors during the war.

His action in joining the Editor of the *British Medical Journal* to found the Medical Insurance Agency should not be forgotten. That useful and prosperous institution owed much in its earlier days to the support given by *The Lancet*.

It was with surprise, but great pleasure that I found on joining the staff at the B.M.A. that Sprigge and the Editor of the *B.M.J.* were on cordial terms. They were both strong men and liked and respected each other. It is easy to imagine how much less unity and good feeling there might be in our profession had the situation been otherwise. I remember Dawson Williams telling me when after the war both he and Sprigge were knighted that his pleasure in the distinction was greatly increased by the fact that Sprigge's good work had also been recognised. There can be few such examples of loyal and cordial cooperation alongside honourable rivalry in the history of journalism.

Sprigge was a delightful companion, genial, witty and humorous. I have heard him make one or two of the best after dinner speeches in my recollection. Few men can have been more utterly devoted to their life's work or prouder of it than Sprigge was, and I am glad that when the end came I found him still in harness. He carried on and improved the great Wakley tradition and in saying this I fancy there could be few things Sprigge would more gladly have heard. I am grateful to have this opportunity of paying a tribute to the Editor I respected and to the man it was a privilege to call a friend.

Sir Humphry Rolleston—Squire Sprigge and I first met in 1883 in the final of the Hospital Rugby try, played on the Half Moon ground, Putney long ago built over when he was playing for St. George's Hospital which on that occasion lost to St. Bartholomew's.

new Hospital.¹ Sprigge had just come up from Corpus College Cambridge and was slight and light but quick as a forward, especially in the Rugby football of those far-off days. Essentially a cultivated littérateur, probably few of those who knew him in his later life only would have guessed his earlier athletic activity or perhaps have read his two books long out of print, in a vein much lighter than some which followed about medical education. These were *Odd Issues* (1898) and *The Industrious Chevalier* (1902) collections of stories charmingly told, and drawing some of their local colour and incident from his life at Cambridge and St. George's Hospital. His *Life of Thomas Wakley*, his predecessor in the editorial chair of *The Lancet* and his work on the autobiography of Sir Walter Besant with whom he was closely associated were fine pieces of biography. With an exceptionally wide acquaintance with medical London he was a shrewd judge of men and manners and could have written an extraordinarily interesting account of the last half century, possibly he has yielded to the suggestion of friends that he should record his observations. His great work was at *The Lancet* and, with Sir Dawson Williams of the *British Medical Journal* who died in 1928, he exerted a memorable, though unobtrusive, influence on medical journalism in this country. Like Delane of the *Times* he was a man of the world with many friends; an interesting and arresting talker and leaves a gap it will be indeed hard to fill. But he had trained a number of his assistants on his own lines who will thus be able to carry on the fine tradition of this doyen of British medical journalism.

Sir Farquhar Buzzard—The death of Sir Squire Sprigge means at any rate to a large number of his contemporaries something more than the loss of a friend whose personal gifts and qualities were peculiarly distinctive and attractive. The experience of many years, a real test of general opinion has given us an almost blind confidence in the management of the journal for which he has been responsible and which largely owing to his able direction has become an essential and outstanding feature of our professional life. The news that *The Lancet* has lost its editor cannot fail to make us realise suddenly and perhaps for the first time how satisfied we have long been with the knowledge that the control of its policy and of its contents lay in his safe and masterly hands. One cannot doubt too that Sprigge's immutable loyalty to the highest traditions of the profession and to the interests of the public was always a great contributing factor to the mutual consideration which has distinguished the friendly rivalry of *The Lancet* and the *British Medical Journal*. There could be no better example of two parallel enterprises conducted with signal success and without resort to the unworthy expedients of journalistic competition.

The respect in which Sprigge was held by the two professions he adorned was based on his intellectual ability and integrity; the personal affection with which he was regarded by his many friends had its origin in his modesty, his generosity and his kindly but keen sense of humour. His services to the art and science and literature of medicine were performed silently behind the scenes and therefore difficult to record or assess, but their great value was indisputable and worthy of our homage, our gratitude and our memory.

¹ A contemporary tell us that Sprigge's consent on Rolleston's election to the staff of St. George's was "I'll meet him well as a vicious Dart & forward."

Sir D'Arcy Power—He was a great editor and many of us have watched with interest the numerous changes he made so unobtrusively whilst he occupied the editorial chair—changes always for the good—until he brought *The Lancet* to its present position. It is a journal which appeals alike to the professional and the non professional reader.

His death carries my mind back to a far distant period. As long as I can recollect my father—Mr Henry Power—paid a weekly visit to *The Lancet* office, then in the Strand at the corner of Bedford street, and brought back two or three books for review. They were, I was told, laid out on a table and each took what he fancied. The books were not returned and my shelves still hold a complete set of Darwin's works with "review copy" stamped inside them. What was paid in cash I never knew, but every Christmas a barrel of oysters arrived with Mr Wakley's compliments and good wishes. The oysters in later years were replaced by a huge home grown turkey bringing the compliments of the season from Tom Wakley. Once on a day never to be forgotten we found ourselves with our noses flattened against the first floor window of *The Lancet* office with a magnificent lunch in the room behind us, in front a glorious cavalcade, for Albert Edward, Prince of Wales, was on his way to St Paul's Cathedral to return thanks for his recovery from an attack of typhoid fever. The day, therefore, was Feb 27th and the year 1872. Alas! all have passed away. The medical members of the Wakley family, Dr Buzzard, Dr Sydney Coupland, Dr Glover, my friend Dr H P Cholmeley, quiet, capable, and scholarly, and now Sir Squire Sprigge. It is the penalty of age and Virgil was right when he spoke of tristis senectus.

Dr R A Young—Sir Squire Sprigge was a man of outstanding personality, with a wide range of knowledge and a clear perspective. He was quick to appreciate ability, intolerant of shams and of ineptitude, but with a deep sympathy for his fellow man in distress or difficulty. He had a very quickly acting mind, with an almost intuitive grasp of the crux of any problem submitted to him. He was a good, attentive listener, where his interest or his sympathy was aroused, and would often at once suggest a solution of a difficult problem or point out the fallacies in its presentation. His position as editor enabled him to watch and to assess the progress of medical science and practice, and he often showed a remarkable perception of the importance of new discoveries. He had a more profound knowledge of the persons and personalities in medicine than almost any man of his time. Such qualities and such experience combined to make a great medical editor, interested not only in medicine as a science and in the art of practice, but always keeping in mind the relations of medicine and medical men to the State and to the common weal.

He wrote easily and in a happy, clear, literary style. His comments were often as keen and as incisive as his editorial mind. He had the rare gift of constructive criticism, and he could quickly rewrite or reshape an article with good material ill presented, which most editors would have discarded. He was a kind and generous host, and with his wide general culture and great artistic gifts he was always interesting and illuminating. He had a keen and sometimes caustic wit, but it was never unkindly. The high standard of medical journalism in Great Britain owes much to his constant watch on the contributions to *The Lancet*, to his avoidance of the sensational, and to the sanity of his policy. The best tribute to him

is the esteem in which English medical journals are held not only in the profession but by the general public, and that not only in this country.

Sir George Newman—The death of Squire Sprigge comes as an unexpected blow to me. One always thought of him as young, alert, and virile. He was, with his great contemporary, Dawson Williams, one of the lights of modern English medicine. It is difficult for the younger generation of medicine to realise what these two men did for the profession and for the public. *The British Medical Journal* and *The Lancet* owe much to their respective proprietors and publishers, but they would be the first to recognise that their two famous editors made the papers what they became. Both papers have rendered a unique service to medical science and to the profession. Squire Sprigge brought to *The Lancet* his own peculiar intellectual gifts. He was also more independent, more a free lance, than his colleague, the editor of the *B M J*, who naturally and properly stood for the Association. He had the foresight and faculty of the literary critic and thinker. More than thirty years ago he published a compilation of papers, entitled "Medicine and the Public," which reveals the wide sweep of his comprehensive understanding of the new age, and embodies the views he had formulated in *The Lancet* before he became its editor in 1907. Though not widely read, it was an epoch making book and its remarkable prevision has been justified in the generation which followed. Sprigge understood, as few men, the principles of governance, what would be best yet what is only practicable, what would be good yet what could be got. He remained steadfast for the dignity of the profession and was jealous of its credit and repute. He did not suffer fools gladly and could be righteously angry. He was very keen on modern research from 1911 onwards, but was impatient when it appeared to go astray, no wild courses for him and no advertising. Wise and urbane man, happy and hopeful traveller, great editor, faithful friend—hail and farewell!

Sir William Collins.—As the biographer of the founder of *The Lancet* Sir Squire Sprigge seemed predestined to succeed the representative of the third generation of the Wakley family in the editorial chair of that journal. He brought to the office a scholarly mind and refined taste, qualities which imparted to *The Lancet* a distinction and independence which secured and retained the confidence and esteem of the profession. Among Sprigge's literary friends and co workers was Dr Sydney Coupland, whose wise and modest advice in medical journalism he gratefully acknowledged. Sprigge's own writings were characterised by width of view and liberality of sentiment. In his "Physic and Fiction" he asserts that "medicine is not yet an exact science," while repudiating the indictment of "a medical priesthood." He foresaw the need for unification of the public health and poor law services under a Ministry of Health and the supersession of the latter by the Local Government Board. If his advocacy of reforms and the redress of abuses was less dramatic and trenchant than that of the redoubtable Dr Tom Wakley, M.P. the first editor of *The Lancet*, it was none the less effective by reason of its erudition and cogency.

Miss R E Darbyshire—The nursing profession owe to Sir Squire Sprigge a lasting debt for his help and wise counsel. During the sittings of *The Lancet* Commission on Nursing Sir Squire gave much time

and thought to our problems and took so great a part in the work of the Commission that his name will be gratefully remembered by nurses. His work for the welfare of our profession will prove of increasing value to us all.

Sir William Rothenstein—I scarcely realised when I first knew Squire Spriggs that he was a medical scientific man. To me he was of the clan of writers and painters who met at Robbie Ross's rooms at the Café Royal at the Savile Club to discuss books and poets and the sins of the bourgeois. Spriggs seemed to know all about painters, *pro* Raphaelites and impressionists and joined in our worship of J. M. W. Whistler. To him also Meredith and Swinburne were god-like heroes; those were days when we were hero-worshippers as well as revolutionaries and scoffers. Spriggs had the painter's eye and the large humanity of the writer, a combination which gave an added grace to a naturally gracious mind. No one was quicker to detect talent in his contemporaries and to hearten the hopes of those who pursued wisdom and beauty in one way or another. And to our rougher, more impatient natures he held up a standard of courtesy and quiet wisdom which he retained during the course of his own life.

Mr Harold Barwell—On meeting Sir Squire Spriggs one recognised at once an uncommon personality. A small slight figure, his well-marked features evidence of his great strength of character were relieved by a humorous expression and his smile was charming. He was a modest man whose unaffected manner put everyone quickly at his ease. A good conversationalist, with a fund of anecdote, he was also a good listener and was therefore the most pleasant of companions. I must speak, too, of his devotion to duty, his loyalty to his old school at St. George's Hospital and his many kindnesses, as well as of his outstanding ability. He was, indeed, exemplary in conduct, courteous in manners, easy of address and steady and firm in principle as became a master of his craft and a great man. We can all spare him.

Prof M Greenwood—A few months ago Sir Squire and I were dining together and in our talk the name of an eminent man prone to an oratory we did not relish cropped up. The truth is, you know," said Spriggs, with a characteristic tightening of the lips, "X. Y. Z. is getting ga ga." I assented cordially and lost myself for a moment in trying to calculate whether X. Y. Z. was twenty or only fifteen years younger than Spriggs. Indeed it was very difficult to believe that he was not one's own age or younger and some newspapers will be unjustly suspected of publishing portraits of him taken at least a quarter of a century ago. Yet with this perennial youthfulness he combined a flavour of a past age. He was never the old gentleman shaking his head at modern follies; he often seemed a reincarnation of the spirit of the eighteenth century or rather of what we idealise as its spirit. With neither under-valuing nor over-valuing the little good things of life, with an unerring eye for humbug and an intellectual pleasure in a neat, clear argument, one felt he would have been on terms of happy equality with Charles Fox, William Windham and Dr George Fordyce.

Those who had the privilege of close association with him can speak with fuller knowledge; to me he seemed an ideal mentor for young men with literary ambitions. I grieve over the loss of a kind friend

but rejoice that to him was vouchsafed a portion we all should make:

Let me not live
After my flame lacks oil to be the scold
Of meaner spirits.

His flame never lacked oil

Mr Cecil Binney—To me Sir Squire Spriggs stands out as my first grown-up friend. As I had been some years at a public school when I first met him I had previously seen and talked to numerous grown-up people, but those who were not school masters were older relations or friends of my family who kind as they might be always treated me as a schoolboy. Dr Spriggs was entirely different. It was not only that he treated me as a grown person, he was himself at the same time so extraordinarily young. He entertained me and discussed current affairs with me as though I were a contemporary. I went with him to the South Kensington museums I had often been to them before but in his company they took on a different aspect. From being gloomy places where children were sent on Sunday afternoons they became galleries where educated people wandered around and discussed the exhibits without any pretence of taking them too seriously. It was like going with one of one's own friends who happened to be extremely well informed and entertaining. Yet there was no affected boyishness about him. His attitude to life was one of kindly tolerant cynicism as though he could understand and pardon everything. Before I met him I had heard a great deal about him and thought of him as a unique parent who did not mind his children or their friends wearing strange clothes or adopting strange creeds and had amused but kindly comments to make on any such developments. It had come therefore as a surprise to me to find that he lived like other people in a normal Kensington house with furniture. But that was my ignorance. I had not enough experience of the world to know that with his breadth of mind his comprehension and complete sincerity he could have no use for any eccentricity.

Mr John Paul Ross—To the younger generation the company of Squire was a great treat and joy and a visit to him was always happily anticipated and even more happily realised. His was a wit that made that of other reputed raconteurs seem laboured and the versatility of his mind was surprising. He seemed to have an inexhaustible fund of knowledge, and he would contribute to almost any subject of conversation in a way that was all the more authoritative because of its modesty and lack of dogmatism. His sympathy and kindness to all was a by-word but none had in him a greater partisan than young people. He had no use for those who constantly lament the efficiency of the present generation and we have lost a true champion. All will miss Squire Spriggs: the clubs whose smoking rooms he delighted the medical profession which he served and the countryside which he loved to paint, but none will miss him more than we youngsters.

Mr F. C. Goodall—As a beginner in a branch of journalism on the fringe of medicine I called at *The Lancet* office some thirty years ago to leave some copy in the hope that it might be used and I was told that the editor would see me. Having hitherto in my short acquaintance with him received more luck than halfpence I was prepared for another kick and resigned to the thought of it. But nothing like that happened. Going into the presence humble and perhaps scared I was at once put at my ease

and for the first time in my newly started career was made to feel a person of some use in the world. He gave me friendly advice and commissioned me to write an article on a subject he suggested, and when the interview was over he did not dismiss me with the nod to which I was accustomed, he walked down stairs with me and shook my hand at the street door. I went away with a new hope and a new heart and vowed that if ever it was my lot to become a leader of any concern I would show the same courtesy to young aspirants.

Dr C P Blacker.—The intense masculinity of his personality and the enormous range of his culture were capable, at first, of inspiring many people with feelings of respect amounting to awe but these were quickly thawed by his friendliness, his humour, and his directness. Very soon one found oneself talking to him as to a man of one's own age. The wide range of his friendships and of his experience of affairs frequently led to attempts being made by younger men to draw him out, to their asking his opinion about controversial matters or outstanding personalities. His power of giving humorous, penetrating yet always kindly appreciation of people and events was memorable. Good qualities never went unrecognised by him, but weaknesses rarely passed undetected. Nearly everyone, as described by him, was likeable, understandable, and human, and the world as seen by him was a better place, peopled by pleasanter people, than as seen by most. His personal modesty was one of the most obvious of his traits, but it did not take long to recognise, in the background of his personality, as an implication and corollary of all that he said and did, an integrity of mind and a fineness of personal quality which made it understandable that he was held in both affection and esteem by his juniors no less than by his contemporaries.

Mr Anthony Bevir.—First as a boy, and afterwards as I grew up, he always seemed to stand for courtesy and kindness in the world of affairs. I am quite sure (memory may be fallible but in this it should not be) that he gave me, each at its appropriate stage, the unexpected half sovereign, then the early cigar, or glass of port at his club, then a suitable range of introduction there, and finally (amongst other things) the suave covering of ignorance on library committees and so forth. I daresay he enjoyed watching the grub turning into a moth but the appreciation was not only on his side. And always there was an appropriate flow of worldly wisdom, touched and lightened by a delightful half mordant, half sympathetic wit.

The truth is, I think, that he liked young people and was naturally more at ease with them than with their elders in the world, though he moved easily enough among them. Adult humanity was not infrequently suspected of humbug, and if there was one thing he detested it was humbug, though he would be the first to appreciate its nicer uses. I think he might have said that it was probably less developed in the young.

It is not for me to write of his professional side either as physician or journalist, though I have had reason to be grateful for advice from his experience or knowledge of both spheres—I only write as a young friend, always engaged by his conversation, delighted in his books ("An Industrious Chevalier" read and re-read always with fresh pleasure) and grateful for his unvarying generosity and kindness. As I write this I inevitably think of his own judgment on what I have written. That young man, he might have

said, with a slight deprecation, might just as well have made it a sovereign while he was about it. Those who knew him will know what I mean.

AT THE MEMORIAL SERVICE

Lord Dawson said. At this service of remembrance I will try and give expression to our admiration and thankfulness for the life of Squire Sprigge.

The son of a Norfolk doctor, he belonged to the countryside, and there his spirit lived during life, and his body now rests. His life was long, rich and varied in achievement, clear and staunch in its purpose. Coming from Uppingham, Caius College, and St George's Hospital, his career was from the first that of author and journalist in varied fields, to which he brought scholarship, competency, and a lively sense of the problems of his day and generation.

The Lancet—this was the chief sphere of his work and influence. His association with that great journal began when he was aged thirty four, and he was editor, by succession from the distinguished Wakley family, for the last thirty years of his life. And picture those years—the rising tide of new knowledge, the growing concern for the health and weal of the people, the uprise of medical insurance and communal services—those and other changes surged round us in the hurry of the times. From Sprigge in his weekly chronicle came the still small voice of reason, which went far to save our profession from the mere clamour of the passing life. Let me bear witness to the service rendered not only to medical science but to national well being by those friendly rivals, the *Lancet* and the *British Medical Journal*, who both regard power as a trust for the public good. Together they embody the expression of the compass, the expanding sphere, and the dignity of English medicine of which the last two generations have been the witness.

With the passing of the years Sprigge's influence radiated far and wide. His culture and urbanity, his liberal outlook and quick appreciation, his enterprise of thought and youthfulness of spirit, and his apt choice of word and phrase made welcome his counsel and companionship. That his life was many-sided is shown by his devotion to sport in his youth, and in later life his enthusiasm as a painter in water colour and his love of gardens. For him beauty was truth and truth beauty.

He was a leader by the force of example, the power to persuade and encourage others and to make his workers feel themselves to be friends engaged in a common enterprise, and his kindness had a sureness of touch which brought all men to him. And yet he was a shy man who sought the shadows, forgetful of self though never forgetful of others. Without sense of mission, his message was part of himself, "for a man's soul is sometime wont to bring him tidings, more than seven watchmen that sit on high on a watch tower." All through he made truth and the counsel of his heart to stand.

His work done—we say farewell and hold fast to a memory—proud, grateful, and long abiding.

The following SPECIAL PRAYER was offered—

O THOU who knowest the secrets of men's sufferings and strivings, we heartily thank Thee for the long life of him whom we mourn to-day, and for his courage and steadfastness in the tasks that were committed to him. And we pray that all we who have known him and loved him, or have worked with him and for him, may likewise find out the way through all perplexities to serve Thine eternal purposes.

SCOTLAND

(FROM OUR OWN CORRESPONDENT)

DISORDERS OF CONDUCT

Dr R. G. Gordon of Bath delivered the Morrison lectures before the Royal College of Physicians of Edinburgh last week. His subject was the neuro-psychological basis of conduct disorder the latter being defined as any behaviour not in accordance with the accepted code of the community in which the individual lives. To understand the neurological correlates of conduct one must study the neurological basis of emotional life and Dr Gordon emphasised the importance of the thalamic and hypothalamic regions in the control of emotions. These lower centres are under cortical control. The main afferent systems converge on the posterior part of the cerebral hemispheres where are situated also the mechanisms for visual and auditory imagery. In front of the central sulcus the brain tissue is largely effector in function and disease of the frontal region may lead to behaviour disturbance. In a series of 200 cases of conduct disorder in children there was no discoverable organic factor in 70 per cent. Even when there is an organic factor Dr Gordon holds that it merely loosens the control of an uncoordinated emotional activity. The study of cases of encephalitis and of chorea is of special interest for in these diseases there is evidence of destruction of cortical cells and consequent interference with control over the emotions.

The study of epilepsy also throws light on conduct disorders. The personality of the epileptic is peculiar. He is solitary, selfish and incapable of normal affects. He shows egotism, morbid sensitiveness and poverty of ideas; he adapts himself badly to social conditions. In some respects he is not dissimilar to persons who have been deprived of their prefrontal cortical areas. Such a person may have high intellectual capacities and yet a defective power of social adjustment. The extreme example of this was Napoleon. The lecturer suggested that the symptom of epilepsy depends on three factors: (1) a state of undue sensitivity or irritability; (2) the excessive number of cells receiving stimuli from the afferent division of the nervous system; and (3) an imperfect inhibition or control by higher levels in the nervous system. Conduct disorders if they occur in epilepsy are sudden, violent and unexpected. The conduct of mental defectives may be regarded as a too direct response of primitive behaviour patterns not far removed from instincts and there are as a consequence poorly developed powers of inhibition. Dr Gordon maintained that the great majority of those who commit a social act of conduct disorder are neither psychotic nor even psychoneurotic. The key of the situation is usually some obvious condition in the complex unity built up by the individual's relations with his environment. It is desirable therefore that in young children stimuli that are likely to evoke undesirable responses should be avoided. As the child grows older a system of ideals and internal inhibitions is built up which serve as a means of regulating conduct. If the instincts are unduly inhibited or unduly released it is not easy to build up a smooth social integration.

EXPERIMENTAL CEREBRAL DEGENERATION

At a meeting of the Edinburgh Pathological Club last week Dr David Orr gave the results of some experiments he had made on pregnant rabbits. He

found that by repeated injections of Atorol into the general circulation of the rabbit he was able to cause necrotic lesions in the fornix and cornu ammonis of the brain of the embryo. After similar experiments with acridine hydrocephalus was commonly produced and was associated with perivascular hypertrophy of neuroglia in the subventricular region.

BUCHAREST

(FROM OUR OWN CORRESPONDENT)

CONGO RED FOR PULMONARY HÆMORRHAGE

Dr J. Popoviciu, senior physician at the Geogiu Sanatorium, has been giving the Bucharest Medical Society an account of his experiences in treating pulmonary hæmorrhage with Congo-red. He pointed out that all the methods in general use have some defect or other. Collapse therapy acts quickly, but it is not always applicable and the means are often not available while the doubtful value of various drugs, opiates, vasoconstrictors and coagulating and hypotensive substances is shown by the great number recommended. Of drugs put forward of late years Congo red has proved the most effective in his hands. It was introduced by Becker in 1930 and Morlock and Pincin recorded a long series of cases in which it failed only twice. In Rumania, Copaceanu and Letu described 11 cases of pulmonary hæmorrhage, with loss of at least 50 c.c.m. of blood in all of which Congo red gave very good results. Usually one injection sufficed to stop even large hæmorrhages.

The hæmostatic action of Congo red has been used for other purposes besides relief of hæmoptysis; thus it has been tried for the intestinal hæmorrhages of typhoid and for hæmophilia. Its exact action is unknown but experimentally it changes the clotting time, increases the number of monocytes, induces thrombocytosis, and augments the quantity of fibrin. According to recent observations it also stimulates erythropoiesis which explains the favourable results achieved by Massa and Zoles in pernicious anemia.

The method is very simple. The dose is 10 c.c.m. of a 1 per cent solution and it must be given intravenously. Sometimes the injection causes shivering for a short time caused by a cardio-depressive shock and in order to avoid this the dose has been decreased to 5 c.c.m. but the reduction also diminishes the hæmostatic action. Doses larger than 10 c.c.m. are not advisable though they are powerfully hæmostatic for they may cause a collapse that may even threaten life. If hæmoptysis recurs after the first injection the dose should be repeated after 4-6 hours. Dr Popoviciu administered Congo red in the Geogiu Sanatorium to 20 cases, and in 12 of them good results were achieved. The patients did not complain of any discomfort after the injections and Popoviciu thinks that intravenous Congo red injections should be regarded as an important antidote for pulmonary hæmorrhage.

TUBERCULOSIS MORTALITY IN RUMANIA

The tuberculous death rate in Rumania is one of the highest in Europe. It is higher in towns and cities than in the villages, and though it decreased in cities during 1932-35 it began to rise again in 1936. In general more men die than women and the age-groups most affected are those between 15 and 50. Mortality is highest in the early spring. In the mountainous districts of the Carpathians it is lower

than in the plains of the provinces of Transylvania and Bessarabia, excepting the mountains inhabited by the Moezs, where the disease is encouraged by poverty and by bad housing and food.

PROF MARINESCU'S RETIREMENT

Prof George Marinescu, who holds the chair of neurology and psychiatry at the University of Bucharest, some years ago reached the age at which professors are legally bound to retire. But at the request of the medical profession his retirement has been twice postponed. Now at 70 he remains full of vigour and it would be hard to replace him. The council of the University have therefore asked the Minister of Education to take steps, if necessary by Act of Parliament, to postpone Dr Marinescu's retirement yet a third time.

VIENNA

(FROM OUR OWN CORRESPONDENT)

MEDICAL CELEBRATIONS

THE last weeks of May gave a welcome opportunity to the medical profession to celebrate the centenary of our famous Gesellschaft der Aerzte in Wien (Medical Society of Vienna). All the progress achieved in the past century in medical knowledge in Vienna—indeed in Austria—has been reported to this learned body. Founded by Franz v Wirer, it soon attained such prominence in scientific circles that the imperial court delegated two arch-dukes to act as its patrons, while among its presidents we find the leading men of the profession. In 1893 the society opened its own house and it boasts of possessing the largest and best equipped medical library in Europe. In the 100 years of its existence over 4000 meetings have taken place. There have been over 15,000 demonstrations of patients and specimens and over 3000 papers have been read. We may mention among others Billroth's papers on the first total removal of the larynx and of the stomach, Koller's report on the use of cocaine in ophthalmology, and Freund's first demonstrations of the therapeutic use of X rays. The celebrations took the form of official receptions by the Government, by the city of Vienna and by the society, and a series of scientific meetings, in which representatives of foreign learned societies took part. There were also many informal social functions including some fine concerts.

Honorary degrees were conferred by the University on three veteran Viennese professors. Prof J v Wagner-Jauregg, Prof A v Eiselsberg, and Prof H Horst Meyer. In the issue of the *Wiener Klinische Wochenschrift* for May 22nd which is dedicated to the society the speeches at the graduation ceremony are reproduced. Over 600 medical men took part in the celebrations and there were also many official delegates from foreign societies.

It is of course impossible to mention all the lectures given at the scientific meetings and a short survey must suffice. Prof Paul Chairmont of Zurich (a former assistant in the Vienna clinic for surgery) gave an account of actinomycosis of the lungs, Prof August Mayer (Tübingen) spoke on the constitution in relation to gynaecology and obstetrics, Prof de Langen (Utrecht) discussed modern views on the circulation, Prof Walter Stoekel (Berlin) showed films of vaginal hysterectomy, Prof. Erich Lexer (Munich) lectured on infection of wounds, Dr

Verbelg (Budapest) read a paper on tumours, and Prof G A Wagner (Berlin) one on ovarian dysfunction and its treatment, Prof. R Leriche (Strasbourg) lectured on modern surgery to an enthusiastic audience, Prof Karl Wessely (Munich) spoke on myopia, Prof O Kahler (Freiburg) on the tonsils, and Prof J H Rille (Leipzig) on extragenital syphilis. Special meetings of the various medical societies were also held at which leading Viennese consultants, including Prof K. F. Wenckebach and Prof. Hans Eppinger, gave addresses.

TOO MANY DOCTORS IN VIENNA

In a communication to the Economic Society of Vienna Prof Eiselsberg reviewed the figures published by the dean of the medical faculty of the University and gave the following details—

Year	No. of students.	
	M	F
1912-13	2553	152
1913-14	2634	184
1919-20	3005	578
1936-37	2457	682

He also stated that last year in the present Austria of 6½ million inhabitants 58 more medical students graduated than in 1914 when the Austrian Empire comprised 36 million inhabitants. Fifty years ago Vienna had 774,000 inhabitants, with 1200 medical men. To day a population of 1,800,000 has 5300 doctors looking after its health. The proportion of one doctor for 645 of the population has gone down to one doctor for 340. Furthermore, the economic condition of the Viennese has deteriorated to such a degree that half the practising doctors can barely make both ends meet from their professional income, only one tenth have a paying practice, while the others do not earn enough to meet their daily expenditure. A substantial increase in the number of women practitioners (and specialists) also makes for over crowding with its harmful effects on the financial position of the profession, for competition is much keener and as a result fees are lower. Prof Eiselsberg thought an attempt should be made to restrict the number of students admitted to the medical faculty. He suggested that the preliminary examinations should be made stricter, and that the public should be informed of the large sums of money required to put a student through his medical course and set him up in practice. He referred to Sweden where only as many students are admitted to the medical register as are required to fill gaps in the profession caused by death or by the creation of new appointments. The system works there satisfactorily, but if it were adopted in Austria all graduation would have to cease for several years.

NEW HEALTH CENTRE AT LEEDS—Lady Swinton on June 11th opened a new health centre at Middleton. It is the first of its kind in Leeds.

FELLOWSHIP OF MEDICINE AND POST GRADUATE MEDICAL ASSOCIATION—Post-graduate courses for July have been arranged as follows: in proctology at St Mark's Hospital (all-day, July 5th to 10th), in dermatology, at the Hospital for Diseases of the Skin Blackfriars (afternoons, July 12th to 24th), in urology at the All Saints' Hospital (afternoons July 12th to 31st), in general medicine and surgery, at the Miller General Hospital, Greenwich (July 10th and 11th). A special demonstration on the fundus oculi for M R C P candidates will be given on Tuesday July 6th, at 8.30 p.m. The courses are open only to members. Further information may be had from the secretary of the fellowship, 1 Wimpole street, London, W 1.

PARLIAMENTARY INTELLIGENCE

HEALTH ADMINISTRATION

IN the House of Commons on June 18th the discussion was resumed in Committee of Supply of the vote for the salaries and expenses of the Ministry of Health. It was agreed to have a general debate on health matters, including the work of the Board of Control.

Some Criticisms

Mr GREENWOOD referred to what he described as the melancholy history of housing during the past two years. The net result of ten years' operation of the Housing (Rural Workers) Act 1920 was to have pitched up about 12 000 rural cottages. So far as he could tell nothing had yet been done to deal with the problem of overcrowding under the 1935 Act. The reason he suspected was that local authorities realising that the Act was a fraud were concentrating their energies on the Act of 1930 where they had scope enough to keep them busy for some time.

MENTAL HOSPITALS

Mrs TATE asked whether the great sum of money being spent in mental hospitals was really necessary and whether its expenditure was touching the problem effectively. An enormous proportion of mental disease was of wholly physical origin which if it had proper treatment in the early stages would never lead to mental treatment being necessary at all. Almost nothing was done to treat mental disease in its early stages. She thought that Part II of the Board of Control's Report was one of the most unsatisfactory documents that had been published. In this report there was very little discrimination between the good hospitals and the bad, but the conditions in the bad could only be regarded as almost too appalling to be believed. Money spent on these was money poured down the drain. It was quite obvious that they must have more accommodation in many parts of the country. If they had to enlarge some of these hospitals could it not be done with far greater effect at very much smaller cost? Surely it was an experiment worth trying in one county to take some moderate-sized country houses, modernise them and put a certain class of mental patient there and have a panel of visiting doctors? The complaints were not so much of ill treatment as of the extraordinary lack of treatment and ghastly lack of understanding. Where that happened the fault was in the staff of the mental hospital. In many hospitals it was practically impossible to-day to get staff and the first improvement they ought to make in the bad hospitals was to improve the conditions under which the staff lived and worked. The whole country welcomed the fact that at St. George's they were attempting to undertake treatment of disease in the early stages but that should not be an isolated instance. It should be compulsory in every State hospital and should be urged on every voluntary hospital.

WALES

Mr JAMES GRIFFITHS appealed to the Minister to be far more generous to Wales in assisting her to develop her social services. Making out black lists of administrative counties in the three important and closely related matters of maternal mortality, tuberculosis mortality and overcrowding he found that there were seven Welsh counties on all three black lists—Anglesea, Denbigh, Carmarthens, Iembroke, Glamorgan, Monmouth and Cardiff. In those seven counties were 80 per cent of the total population of the principality. In the period from 1921 to 1933 maternal mortality in Wales exceeded the rate in England by 30 per cent while that in the special areas had been substantially increasing. Out of 13 administrative counties in South Wales eight had

no antenatal clinic yet they were among the counties that showed the worst maternal mortality rates. The average tuberculosis rate for the whole country during 1936 was 002 but every county and county borough except two in Wales was far in excess of that figure. Five administrative county boroughs having a rate well over 8000. The local authorities were too poor to spend more unless they were assisted.

EDUCATION OF THE PUBLIC

Captain ELLISTON congratulated the Minister of Health on the promised campaign to educate the people to use the health services already provided by local authorities in all parts of the country. He was grievously disappointed that the Minister had missed the opportunity of giving the House some assurance as to the promised long term legislation dealing with a national milk policy. There was a consensus of expert opinion that the case for the pasteurisation of milk was scientifically irrefutable and that by that means milk could be made as safe as water was made by chlorination and filtration. The real opposition to this protection was dictated by economic considerations. No doubt pasteurisation would involve producer-retailers in extra cost but if unfit houses and unsound food were prohibited was it reasonable that they should continue to allow the marketing of unsafe milk? The serious problem of rheumatism was receiving the attention of a great voluntary organisation, the Empire Rheumatic Council. If the Minister of Health could stand aside while voluntary bodies tackled problems of this kind then at least he ought to find sufficient funds for those bodies to get on with their work. They should also help by stimulating local authorities to do their part by establishing clinics which could be taken advantage of at a reasonable cost and also by providing wards and research units in poor law hospitals taken over by municipalities. Again the prospective decrease in our population was a problem that called for immediate recognition. It also had been handed to a voluntary organisation, the Population Investigation Committee which had no staff and no funds. He would have thought a matter of this urgent significance to the future of our race would call for the immediate appointment of a Royal Commission backed up by the resources of every Government department concerned. He also hoped that they would hear something from the Minister about the continued exploitation of the public by vendors of quack medicines and appliances. Practically all the facts were known and in the circumstances one could not but be surprised that an abuse of that kind should be allowed to continue.

Mr SANDERS said he did not understand how it was possible to conduct a progressive policy for the improvement of national health unless one had an estimate of human needs translated into terms of family income. He did not understand the apparent unwillingness of the Government to recognise the close connexion between spending power and adequate feeding. The Government should collect without further delay all the necessary information to enable them to lay down a minimum standard of life below which no one would be allowed to fall.

The Minister's Reply

Sir ROBERT WOOD, Minister of Health replying said that what was first needed in connexion with the problem of our declining population was research of a scientific kind, more facts, and a more satisfactory and informative method of getting population statistics. There were only two ways in which really complete information could be obtained—the census and the registration system. The latter was clearly the best for the purpose. Existing powers however only permitted of information relating to births to be

obtained for entry in the birth register, and full copies of this register could be obtained by the public. The objection to a proposal to enter up in it information about the date and duration of the marriage and the number of children previously born of the marriage would be met if it were arranged for the necessary particulars to be given to the registrar confidentially for statistical purposes only. Legislation for this would, of course, be required.

The treatment of venereal disease in this country was based on the recommendations of the Royal Commission that reported in 1910. The main feature of the scheme was the provision of centres throughout the country where full facilities for diagnosis and treatment were available free of charge to anyone who suspected that he might have contracted the disease. He would emphasise that the Royal Commission reported against any system of compulsory notification or treatment. They had built up on that system about 180 centres in England and Wales, and the total number of attendances by patients each year was well in excess of 3,000,000. In 1935 the total number of cases dealt with for the first time at the centres was 98,000, and of those as many as 30,230 were found not to be suffering from venereal disease. That showed that the centres were readily used by persons who were apprehensive of having contracted the disease and who were quite prepared to go there freely in the confidential circumstances he had mentioned. The policy and belief of the Ministry of Health at present was that the greater use of these centres could best be secured only by judicious education and propaganda on the importance of seeking early and skilled treatment. The anti-venereal disease measures in Scandinavian countries differed from ours essentially in having notification and compulsory treatment. A commission sent by the New York health authorities had recently issued a report which attributed an important part of the success in reducing the incidence of syphilis in Sweden and Denmark to notification and compulsory treatment. He did not intend to comment on that report. He had seen an important article in *The Lancet* which contravened a good many of the statements made in the report. He would leave it at that, but this report had attracted a good deal of attention and had, he thought, caused a revival, at any rate in certain quarters, of the agitation for compulsion here. In this country there had been a decline of 36 per cent in the figures of fresh syphilitic infections since 1931. It was true that between 1924 and 1929 there was apparently little or no decline, but since then the decline had been remarkable, and the rate of fresh infection with syphilis which was now in the region of 100 per 1,000,000 of the population compared rather favourably with the comparable figure of 220 per 1,000,000 in Denmark. A further special study of one or more of the Scandinavian systems might yield useful results, and the Secretary of State for Scotland and he were therefore arranging for one of the medical officers of his department who was particularly concerned with this matter and one of the medical officers from the Scottish Office, together with an administrative officer experienced in venereal diseases, to visit Scandinavia at an early date and report to them. That report should enable them to give further consideration to this problem.

MR. TURTON. Would my right hon. friend consider the extension of that inquiry to Holland where there is voluntary treatment? That would enable him to get both sides of the picture.

SIR KINGSLEY WOOD said he would certainly consider that suggestion. Continuing, he said that he recognised that a great deal more had to be done for housing and particularly rural housing. It was to be the subject of special study by the Central Housing Council, and he hoped that they would be able to do something further in rural areas. In regard to overcrowding he had made a number of inquiries from typical local authorities in the country as to the

exact position. Without putting into operation any of the penal provisions of the Overcrowding Act there had been a reduction in some of the ten or twelve districts with which they had communicated of some 20 per cent. That was rather interesting and pointed to what the position would be when the Act itself came into full operation.

HUMANISING MENTAL TREATMENT

He claimed for the mental health services that good progress was being made in the humane and progressive treatment of the mentally disordered and the mentally defective people of this country. Extracts had been given in the debate from the report of the Board of Control regarding a number of what might be called bad cases. Anyone who looked at that report would also see the records of a far greater number of good cases. He supposed that in no other country in the world would they see such a frank statement of the position in connexion with these mental institutions, and what ought to be done in the particular cases referred to. Directly the officers ascertained these cases they were placed on record, and the attention of the authorities concerned was drawn to the facts and they were called upon to do their best to remedy them. He would emphasise three things in connexion with the mental services of the country: there must be, first, constant vigilance in the conduct and control of these institutions, secondly, unabated efforts to secure the right type of nurse, and thirdly, vigorous investigation of any instances reported of ill usage or bad treatment. There was great scope for further research into the causes of mental affliction, and recently he appointed a committee under the chairmanship of Lord Radnor to see what further could be done to advance research. The need for providing further accommodation was fully realised. Many schemes were in hand and in contemplation which should overtake this. The total amount of loan sanctions last year for the purposes of the Lunacy and Mental Treatment Acts was over £2,000,000 as compared with £1,700,000 in 1935-36. One of the best signs of the time in connexion with the treatment of mental disease was that the flow of voluntary patients had steadily increased. Last year more than 25,000 patients were admitted to public mental hospitals and of these nearly 27 per cent were voluntary admissions. The number of out-patient clinics had now reached a total of 105. Mrs. Tate's suggestion about taking over country houses had been tried and had been found rather expensive, and not very practicable. He assured Mrs. Tate that the importance of physical illness as a causal factor in mental disorder was widely recognised. Within seven days of admission the medical superintendent was required to send to the Board of Control a medical statement of the mental and bodily health and condition of each patient.

They were taking steps in this country to build up a nutrition poller. He would like the committee to look at the report signed by all the leading men of the country including Sir John Orr, Prof. Cathcart, and Prof. Mellanby. Their recommendations he was carrying out at the present time and a number of inquiries were now in operation. In many directions the local authorities, owing to the increased sums of money available to them under the block grants, were now extending their services in connexion with milk for children and expectant mothers and matters of that kind. Owing to individual differences it would be quite impossible to lay down any standard of food requirements to be applied to all people alike. The best that could be done in present circumstances was to suggest standards in relation to man value in terms of energy requirements, the unit being on a sliding scale according to muscular activity. The other inquiries which the Advisory Committee recommended were now in progress. In conclusion, Sir KINGSLEY said that in the long and continuous fight—which had still to go on—against disease and ill health we were steadily gaining ground.

NOTES ON CURRENT TOPICS

The Factories Bill

On June 15th 10th and 17th in the House of Commons the Report stage of the Factories Bill, as amended in Standing Committee was concluded.

Mr SAMUEL HOARE, Home Secretary moved a new clause providing that adequate and suitable facilities for washing, including a sufficient supply of soap and clean towels should be provided in certain specified factories and that it should come into operation on July 1st 1939. After some debate Mr Samuel said he would withdraw it on the grounds that it was not comprehensive enough and have it drafted on different lines bringing it forward when the Bill reached the House of Lords.

Sir S. HOARE moved a new clause to ensure that suitable accommodation in all factories should be provided for clothing not worn during working hours and that suitable arrangements should be made for drying such clothing. The new clause was read a second time. An amendment moved by Mr MANDER to give the Home Secretary power to prescribe also a suitable standard of facilities for drying clothing as agreed to and the clause as amended was added to the Bill.

Mr LLOYD Under-Secretary Home Office moved a new clause providing that in any specified process that involved a special risk of injury to the eyes from particles or fragments thrown off in the course of the process, suitable goggles or effective screens should be provided. This clause was read a second time and added to the Bill.

A clause moved by Mr BANFIELD to prohibit night baking was negatived by 228 votes to 125 after debate. Mr ELIAS SMITH moved a new clause to provide safety first committees in factories; but this was negatived by 202 votes to 119. Lieut.-Colonel RANDIEMAN ALLEN moved an amendment to Clause 2 which deals with overcrowding to the effect that where a room contained a gallery a gallery should be treated as if it formed a separate room. This was agreed to. Mr RUDLEY moved an amendment providing that it should be the duty of an employer to post up a notice in the factory and workroom stating the number of employees who could be engaged there at one time within the terms of the Act. This also was agreed to.

On Clause 14 dealing with the fencing of other than transmission machinery Mr LLOYD moved an amendment, which was agreed to, providing that the Secretary of State might make regulations directing that when there was a really good safety device for any machine its use should be compulsory. Mr SMITH moved an amendment to Clause 52 (underground rooms) to the effect that no work should be carried on in any underground room unless the room was certified to be suitable on hygienic grounds and, in particular, as regarded construction, light ventilation and adequate means of escape in case of fire. It was negatived by 209 votes to 131. Mr LLOYD moved an amendment which was agreed to providing restrictions in regard to the use of underground rooms. He said that it represented a very considerable tightening up of the provisions in that respect.

Mr LLOYD moved a series of amendments to Clause 53 (basement bakehouses) providing for recertification or re-examination of basement bakehouses to see whether in the light of modern conditions they were suitable for use. This was agreed to.

On Clause 60 (General conditions as to the hours of employment of women and young persons) Mr R. J. DAVIES moved an amendment providing that it should not be lawful to employ in a factory a young person under the age of 15. He said the new machines and the speeded up machines in industry were becoming too dangerous for children to handle. Now that they were about to launch a campaign for greater physical fitness and to pass

this amendment would be a great contribution. Sir S. HOARE said the Government could not now repudiate the policy they had adopted in the last Education Act after the closest consideration and exclude from beneficial employment something like two-thirds of the young people whom they were now discussing and who were actually employed in factories and workshops. In a subsequent clause in the present Bill the Government were reducing the hours of work of these young persons by four hours a week and were prohibiting overtime for them altogether. He could give an assurance that cases of exemption would be very carefully considered and the employers would have to justify their demands for individual young persons. It would thus be quite impossible to change the considered policy of the Board of Education and instantly to bring about in industry unnecessary dislocation and in many cases harm to the young persons by driving them into unsuitable employment. After further debate the amendment was negatived by 207 votes to 137. Mr DONNIE moved an amendment to substitute 40 hours for 48 hours as a maximum working week for women and young persons. Sir S. HOARE said that this if carried would make a tremendous change in industrial life and would cause considerable dislocation. The amendment was negatived by 191 votes to 128. Mr LLOYD moved an amendment providing that the hour for stopping work should not be later than 8 o'clock in the evening in the case of young persons under 10 and 8 o'clock in other cases. This was agreed to.

On Clause 124 (Appointment and duties of examining surgeons) Mr R. J. DAVIES moved an amendment providing that subject to the consent of the employed person concerned the examining surgeon should have the right to inspect the medical records of the medical practitioner employed by the occupier of the factory. Mr LLOYD said the proposal would not be practicable. There was a serious objection to the suggestion that the examining surgeon should have the right to conduct a sort of roving inquiry into records of another practitioner irrespective of his precise duties under the Act. The Home Office thought it would be more practicable to leave the matter to be settled between the two doctors. The amendment was withdrawn after an assurance from Mr LLOYD that this point would be borne in mind in relation to the subsection under which the Home Secretary may regulate the duties of the examining surgeon. Mr I. SMITH moved an amendment providing that where any person was liable to contract an industrial disease from any process carried on in a factory the examining surgeon should examine such person at least once a month during working hours and keep a record for examination by the Inspector. Mr LLOYD said that the term industrial disease in the amendment was very vague and might include a large variety of diseases. A vast number of examinations would have to take place and it was too rigid a requirement to lay down a month as a period for examinations. It ought to depend on circumstances. Silicosis for example, developed very slowly and a highly technical and skilled diagnosis was required which the ordinary doctor was not capable of carrying out. In dermatitis the position was exactly the reverse. It developed very quickly indeed and a monthly examination would not be frequent enough. If the power which the Home Secretary possessed in Clause 11 to require the medical supervision of workers in all factories in certain circumstances was used as he was sure it would be it might prove a very important provision in industrial disease. The amendment was withdrawn.

Methylated Spirits (Scotland) Bill

In the House of Lords on June 16th the C stage of the Methylated Spirits (Scotland) Bill concluded.

On Clause 1 (Restrictions on sale of

spirits), Lord ASKWITH moved the following new subsection

"Nothing in the foregoing provisions of this section shall apply to surgical spirit sold by an authorised seller of poisons on registered premises or supplied by a duly qualified medical practitioner, registered dentist or registered veterinary surgeon for the purposes respectively specified in Subsection (1) of Section 19 of the Pharmacy and Poisons Act 1933, if the requirements of Subsections (2) and (3) of the said section are complied with in relation to such sale or supply of surgical spirit in like manner as if it were a medicine"

The amendment was agreed to. On Clause 6 (Interpretation), Lord ASKWITH moved an amendment providing that the expressions "authorised seller of poisons," "registered dentist," and "registered veterinary surgeon," should have the like meanings as in the Pharmacy and Poisons Act, 1933, and the expression "registered premises" should mean premises duly registered under Part I of that Act. This was also agreed to.

Young Persons and Health Insurance

In the House of Commons on June 22nd Sir KINGSLEY WOOD, Minister of Health, presented the National Health Insurance (Juvenile Contributors and Young Persons) Bill, a measure to amend the National Health Insurance Act, 1936, so as to make certain persons under the age of sixteen eligible for medical benefit, to facilitate the provision of medical benefit to such persons and to other young persons, and for purposes connected with the matters aforesaid.

The Bill was read a first time.

QUESTION TIME

WEDNESDAY, JUNE 16TH

Persons over 70 and Public Assistance

Mr LANSBURY asked the Minister of Health if he could inform the House how many persons over 70 years of age resident in the County of London were receiving grants from the public assistance authority owing to the insufficiency of the pension for their maintenance and the total yearly cost to the London rates of such payments, and if he would give the same information in regard to Manchester and Leeds and the counties of Glamorgan, Monmouth, and Durham.—Mr BERNAYS, Parliamentary Secretary to the Ministry of Health, replied: The returns made to my Department relating to persons in receipt of poor relief do not distinguish the number of such persons over 70 years of age. The returns do, however, show the number of persons over 65 years of age drawing old age pensions under the various Acts who are also in receipt of outdoor relief. I regret that information as to the amount of expenditure on poor relief to old age pensioners is not available in my department. The following is a table giving information as to the number of persons over 65 drawing old age pensions who are also in receipt of outdoor relief—

Administrative County of London	24,787
County Borough of Manchester	5,609
County Borough of Leeds	2,988
Administrative County of Glamorgan	8,476
Administrative County of Monmouth	3,477
Administrative County of Durham	8,015

International Red Cross and Spanish Refugees

Sir HENRY CROFT asked the Secretary of State for Foreign Affairs whether he was aware that General Franco offered that the old men, women and children of Bilbao should be evacuated to a zone west of Bilbao under guarantee from the International Red Cross, and that such zone would not be used for military purposes, whether this offer was conveyed to H.M. Government, and whether any steps were taken to provide such an asylum on Spanish soil under guarantee of the Red Cross before thousands of Spanish children were taken from their parents and removed to foreign countries.—Mr LORRY replied: A proposal to this effect was contained in the

reply received from the insurgent authorities to the communication made to them by H.M. Ambassador at Hendaye, in which notification was given of the steps which the Government proposed to take to protect Basque refugee ships. H.M. Ambassador accordingly inquired of the insurgent authorities whether their proposal constituted an offer of subsidiary action to that which was then being taken and whether it might be put before the Basque authorities with a view to the opening of negotiations. At the same time unofficial inquiries were made by H.M. Consul at Bilbao from whom it was, however, learnt that the Basque authorities did not regard the proposal as a practicable one, on the grounds that there were no villages between Bilbao and Santander capable of housing large numbers of persons, no water and no sanitary arrangements, and that the position of refugees might become untenable in the event of an insurgent advance in the direction of Santander. The insurgent authorities, as a result of the steps which had already been taken, subsequently made it clear that they were themselves no longer interested in the proposal, and it was, therefore, felt that no useful purpose would be served by pursuing it any further.

THURSDAY, JUNE 17TH

Persons Transferred from Poor-law to U.A.B.

Mr BATEY asked the Minister of Labour the number of unemployed who had been taken from the poor law by the Unemployment Assistance Board in Great Britain and also in the county of Durham, and the numbers refused up to the latest available date.—Mr LANCELOT BROWN replied: Information in respect of local government areas is not available but the following table shows, in respect of Great Britain and the Unemployment Assistance Board's administrative district of Durham, as on May 28th, in column (1) the number of persons in receipt of public assistance prior to the Second Appointed Day who had made applications for unemployment assistance allowances and who were taken over from public assistance authorities, and in column (2) the number of such applicants held to be outside the scope of the Unemployment Assistance Act.

	(1)	(2)
Great Britain	90,237	43,689
Durham district	2,775	1,404

Note.—Durham District includes the Board's administrative areas of Bishop Auckland, Chester le Street, Consett, Crook, Durham, Horden, Houghton le Spring, Pallion, Spennymoor and Sunderland (1) and (2).

Children Born in Prisons

Mr ROBERT MORRISON asked the Home Secretary what information was placed upon the birth certificates of babies born in prison with regard to their place of birth.—Sir S. HOARE replied: Governors have instructions that the word "prison" is not to appear in the notification to the Registrar, and that the name of the road or street in which the prison is situated is to be given as the address.

Mr WHITELEY asked the Home Secretary whether he was aware of the strong feeling against childbirth taking place in prison, and whether he was prepared to introduce legislation to abolish such practice.—Sir SAMUEL HOARE replied: This would involve an amendment of Section 17(6) of the Criminal Justice Administration Act, 1914, which gives the Secretary of State power to release temporarily a prisoner if he is suffering from disease which cannot properly be treated in prison or if he requires to undergo an operation which cannot properly be performed in prison. I will, of course, see that the question is not overlooked when any amendment of the Prison Acts and related legislation is under consideration, but I am not prepared to give any definite undertaking at the moment.

Ophthalmic Treatment in Schools

Mr DAX asked the President of the Board of Education how many children had been provided with spectacles in England and Wales under the arrangements made by the education authorities for the 12 months ended to the last convenient date, whether all local education authorities had the services of a qualified and experienced oculist, and at what periods were children's eyes

re-examined.—Mr KENNETH LINDSAY During the year 1936, 166,257 children attending public elementary schools in England and Wales were provided with spectacles under arrangements made by local education authorities. With the exception of the authority for the Isles of Scilly all local education authorities have arrangements for the treatment of defective vision by a qualified medical practitioner who has had special experience in ophthalmic work. All children in whom any defect of vision has been found are re-examined from time to time but the interval between the examinations depends on the nature and extent of the defect.

Official Tests of Gas Respirators

Mr PARKER asked the Home Secretary whether in view of his refusal to allow Members of Parliament to purchase Government gas respirators for carrying out experimental tests, he would now in the public interest publish the results of official tests which had been made.—Mr GEORGE LLOYD replied: The result of exhaustive official tests is that the civilian protector has been shown to protect effectively the face, eyes, and lungs against any type of gas which so far as is known, could be used in war.

Notification and Compulsory Treatment of Venereal Disease

Mr TURNER asked the Minister of Health whether in view of the conflict of opinion on the merits of notification and compulsory treatment of venereal disease and the remarkable reduction which had taken place in the incidence of syphilis in Scandinavian countries where this system prevailed, he would promote an inquiry to discover how much, if any of the Scandinavian success was attributable to this system.—Sir KINGSLEY WOOD replied: I am giving careful consideration to this matter.

Hospitals under Public Health Acts

Mr MERRICK asked the Minister of Health how many county and county borough councils had appropriated hospitals under the Public Health Act.—Sir KINGSLEY WOOD replied: Eleven county councils and 39 county borough councils in England and Wales have, since the Local Government Act 1929 came into operation, appropriated poor law hospitals or infirmaries or parts thereof, for use as general hospitals under the Public Health Acts. In addition, 6 other county councils have appropriated such institutions for other public health purposes, such as tuberculous hospitals, maternity hospitals, convalescent homes or epileptic homes.

Sanatorium Treatment of Tuberculosis

Mr MERRICK asked the Minister of Health if he could give comparative figures of cases of pulmonary tuberculosis treated in sanatoria under public health authorities for the years 1934, 1935, and 1936.—Sir KINGSLEY WOOD replied: The numbers of cases of pulmonary tuberculosis treated in public health and approved residential institutions during the years in question in England and Wales are as follows—

1934	30,850	1936	41,630
1935	40,484		

MONDAY, JUNE 21ST

Medical Examination of School-children

Mr LLOYD asked the Parliamentary Secretary to the Board of Education the number of school-children medically examined in the city of Leicester at the most recent convenient date; the number of medical examiners then employed; and the number of children then found to need medical treatment.—Mr KENNETH LINDSAY replied: During the year ended Dec. 31st 1936, 19,346 school children in the city of Leicester were examined at routine medical inspections, and 15,882 at special inspections. There were also 26,257 re-inspections.

The number of children found at routine medical inspections to require treatment for defects other than defects of nutrition, uncleanness, and dental diseases, was 1569. Information is not available to show the number of children found to require treatment at special inspections

but 11,277 defects requiring treatment were found. On Dec. 31st 1936 six whole time medical officers were employed by the local education authority in the work of medical inspection and treatment.

TUESDAY, JUNE 22ND

Children Injured by Spiked Railings

Mr MCGOVERY asked the Secretary of State for Scotland if his attention had been drawn to the large number of accidents in Glasgow where children had fallen on spiked railings; and whether he would introduce legislation to abolish all spiked railings on housing schemes.—Mr ELLIOT replied: The answer to the first part of the question is in the affirmative. Since 1922 the erection of spiked railings in or between back courts in Glasgow has been prohibited, and if a provisional order now before Parliament is confirmed existing spiked railings in or between back courts will become illegal after the expiry of four years from the date of confirmation.

Protective Equipment for Miners

Mr TOM SMITH asked the Secretary for Mines to what extent protective equipment in the way of helmets, gloves, &c. was in operation in the various coalfields.—Captain CROOKSHANK replied: The reports for 1936 of the Divisional Inspectors and of the Safety in Mines Research Board which will shortly be published contain a good deal of information showing that satisfactory progress has been made in the various coalfields in the use of protective equipment, hard hats for example being bought at a rate of more than 12,000 a month. I should like to take this opportunity of expressing my appreciation of the keenness and co-operation, shown by all sections of the industry, which have enabled a gratifying measure of progress to be attained.

Committee on Dangers of Celluloid Toys

Mr CARTLAND asked the Home Secretary whether he had yet set up the departmental committee to inquire into the question of the danger to children and others arising from the use of celluloid toys and other articles and if so what were its terms of reference.—Mr LLOYD, Under Secretary Home Office replied: I am glad to be able to announce that Sir Vivian Henderson formerly Parliamentary Under Secretary of State at the Home Office has consented to act as chairman of this committee and my right hon. friend hopes that the composition of the committee will soon be completed. Its terms of reference will be: To inquire into the use of celluloid to any similar highly inflammable material in the manufacture of toys, fancy goods, articles of attire, toilet requisites and the like and to consider what steps are desirable and practicable against the danger arising to the public and especially to children, from such use.

KING GEORGE HOSPITAL, ILFORD.—A festival dinner at which the Duke of Gloucester was the chief guest was held in aid of this hospital at the Mansion House, London on June 10th. The population of the immediate area served by the hospital has increased from 100,000 to 400,000 and the need for more accommodation is urgent. Over £6000 in donations was received at the dinner.

POST-GRADUATE COURSES IN BERLIN.—International post-graduate courses are to be held in Berlin on the following subjects: allergy in rheumatism (Oct. 4th-9th); natural methods of treatment (Oct. 11th-17th); tuberculosis (Oct. 18th-23rd); intrathoracic surgery (Oct. 25th-29th); infectious diseases in children (Oct. 18th-23rd); dermatology and venereal diseases (Oct. 18th-23rd); obstetrics and gynaecology (Oct. 24th-30th); homoeopathy (Oct. 11th-Nov. 6th). There will also be a course in diseases of the ear, nose and throat during October. Monthly courses in all the special departments of medical science including practical work are arranged. Particulars may be had from the information bureaux of the Kaiserin Friedrich Haus, Robert Koch Platz, Berlin N.W.

THE SERVICES

TERRITORIAL ARMY HOSPITALS

The War Office announces that it has been decided to form peace time cadres for Territorial Army general hospitals for home service on similar lines to those which existed before the late war. There will be 29 such hospital units and these will be distributed between the various military commands. The exact location of all of them has not yet been determined.

The serving personnel for each hospital unit will consist of 3 officers and 24 other ranks who will be members of the Royal Army Medical Corps, Territorial Army. The officers appointed will be the officer commanding, a registrar, and a quartermaster. The other ranks may be enlisted for home service only and the upper age limit for enlistment or re engagement will be 50. In addition, medical men will be appointed who will constitute the visiting and resident staff on embodiment, but who will not be required to do duty in time of peace.

It is intended that each hospital should be able to accommodate 600 patients (including 60 officers) in the first instance and be capable of expansion up to 2000 beds should the necessity arise. The following statement shows the peace and war establishments of officers —

PEACE ESTABLISHMENT

As stated above, the officers appointed in peace time will be a commanding officer (lieut colonel), a registrar (major, captain, or subaltern), and a quartermaster (non medical). The commanding officer will hold the rank of colonel on embodiment.

ESTABLISHMENT ON EMBODIMENT

(i) *The visiting civilian staff* (part time) will consist of 2 physicians, 4 surgeons, 1 ear, nose, and throat surgeon, 1 ophthalmic surgeon, and 1 anaesthetist.

(ii) *The resident staff* (whole time) will consist of 1 physician (major), 1 surgeon (major), 1 pathologist (major), 1 radiologist (major), 1 anaesthetist (captain), 4 general duties (captains or lieutenants), and 1 dental surgeon (captain or lieutenant). The four officers on general duties will be appointed after embodiment and will hold temporary commissions. All the other officers will hold T A commissions (Reserve of Officers) and will be appointed in peace time.

(iii) *Additional staff*—After embodiment 4 civilian medical practitioners (who may be final year medical students) will be appointed to part time employment or general duties.

The arrangements have been drawn up with a view to providing an adequate staff while interfering as little as possible with the medical care of the civil community. Proportionate increases in establishments will be authorised as hospitals expand, and hospitals for the treatment of special cases will have appropriate staffs selected accordingly. Part-time officers are to be not less than 50 years of age.

A further announcement will be made by the War Office when recruiting can begin. In the meantime application should not be made for enlistment into these units.

INDIAN MEDICAL SERVICE

ANNUAL DINNER

One hundred officers of the Indian Medical Service dined together on June 16th at the Trocadero, when Brevet Colonel Sir Rickard Christophers presided. The members of the Service present were as follows —

Major Generals W V Coppinger CIE, DSO, A W M Harvey CB, Sir Courtenay Mansfield, KCB, CMG, Sir John Megaw, KCIL, C W F Melville,

CB, Sir Leonard Rogers, KCSI, CIE, FRCS, Sir Cuthbert Sprawson, CIE, and G Tate, CIE.
Colonels H Answorth, J Anderson, CIE, Sir Charles Brierley, CIE, Sir Rickard Christophers, CIE, OBE, FRCS, H M Cruddas, CMG, OBL, H R Dutton, CIE, A B Fry, CB, DSO, C A Gill, T A Granger, CMG, C R M Green, W H Leonard, CB, H M Mackenzie, CIE, F P Mackie, CSI, OBE, Sir Richard Needham, CIE, DSO, J J Pratt, A H Proctor, DSO, C H Reinhold, MC, A Spitteler, OBE, Ashton Street, R G Turner, CMG, DSO, and W S Willmore.

Lieut Colonels J E Ansley, W P G Alpin, OBF, A C Anderson, C H N Baker, C H Barber, DSO, A C L Bilderbeck, R H Candy, CIE, H P Cook, D Clyde, D G Crawford, J M Crawford, OBL, J B Dalzell Hunter, OBE, S C Evans, J K S Fleming, CBE, P F Gow, DSO, V B Green, Armytage, A E Grisewood, J B Hanafin, CIE, J B Hance, OBE, W L Harnett, CIE, H Hingston, E H Vere Hodge, J M Holmes, E V Hugo, CMG, S P James, CMG, FRCS, M L C Irvine, I Davenport Jones, H C Keats, H H King, CIE, M M Khan, J B Lapsley, MC, J C H Leicester, CIE, C McIver, E C G Maddock, CIE, W A Mearns, F O N Mell, CIE, S H Middleton West, MC, F O'Kinealy, CIE, CVO, J Rodger, MC, OBE, H Ross, CIE, OBE, H K Rowntree, MC, J D Sambeif, J A Sinton, VC, OBE, R B Seymour Sewell, CIE, H B Steen, R Steen, W D H Stevenson, CIE, H Stott, OBE, W A Skes, DSO, H J H Symons, MC, C Thomson, G S Thomson, E Owen Thurston, A G Tresidder, CIE, E L Ward, CBE, and E L Waters.

Major H C Brown, CIE, J A W Edden, Sir T Carey Evans, MC, A Innes Cox, M J Quirke, and J Scott Riddle.

Captains T D Ahmad, H L Barker, and B V Rao.

Officers on probation B J Doran, J R Kerr, C F Mayo Smith, J D Munroe, G W Palmer, S Shono, W C Templeton, and G F J Thomas.

The last eight mentioned were present by invitation, and the other guests were Sir Frank Brown, CIE (the *Times*), Dr N G Horner (*British Medical Journal*), Maj General W P MacArthur, DSO, AMS, Sir Frederick Menzies, Dr Egbert Morland (*The Lancet*), Dr H Letheby Tidy, and Prof G Grey Turner.

SIR RICKARD CHRISTOPHERS in proposing the toast of the Service said that when a good many years ago certain new political changes were introduced into India, people used to think that the outlook for the Indian Medical Service was gloomy. Things had not worked out that way, looking round the room to night the Service seemed to him still going strong. Its history was long and, medically speaking, glorious. It had never been a service to provide merely medical attendance. Most of us, he said, have been organisers; many of us have brought special qualifications into the service. In the past the IMS had not only served the military and civil requirements of India, but had provided the botanists, the zoologists, and other scientific workers. All this had been put on record by the historian of the IMS, Col J M Crawford. It seemed to him that the activities of the IMS were none the less varied and important at the present time, witness the nature of appointments held by many of them after retirement, and in India there were still many whose names were well known in scientific circles. As to the future prospects, let me refer you, he said, to the new regulations just passed for the IMS, and it would

be innumerable if I did not say how much we as a Service owe to Sir Leonard Rogers Sir John Megaw and our present director-general for the way in which our case must have been presented to the authorities who decide these things. India offers splendid opportunities and a great variety of interests in life to those who go there. Probably only those who have experienced the life realise its fullness. I have been 30 years in the Service almost all my time in India, and never for one day have I been sick or sorry I joined nor have I seen any other service which could have given me the same pleasure and interest in life. We have heard a good deal about changed conditions but India is not the only place where there are changes and we cannot as a Service expect not to have to adapt ourselves to new things.

Lieut.-Colonel J A SEXTON V.C. who proposed the health of the chairman, described him as one who got at the basic principles of the subject he was investigating. At the tropical school they expected to get a whole-time worker and they only got some one who worked 12 hours a day.

After that Colonel Anderson told some stories and the dinner secretaries Sir Richard Needham and Sir T. Carey Evans received informal thanks.

INDIAN MEDICAL SERVICE

Col H. C. Buckley V.H.S. to be Maj. Gen. The undermentioned officers relinquish their temporary commissions. Capt. T. R. Pahwa M.A. Gaffar; M. Haftuddin, Copel Singh K. L. Malhotra K. V. R. Choudhary and Lt. A. Haq.

ROYAL NAVAL MEDICAL SERVICE

Surg. Capt. P. L. Gibson to Pembroke for R.N.B.
Surg. Lt. Comdr. (D) W. E. L. Brigham to Pembroke
Surg. Lt. C. J. Mullen to Pembroke
Surg. Lt. (D) H. C. Brewerton to R.M. Infirmary Deal

ARMY DENTAL CORPS

Capt. H. Quinlan to be Maj.

ARMY MEDICAL SERVICES

Lt.-Col. A. G. Biggam O.B.E. M.D. Edin. F.R.C.P. Lond., R.A.M.C. has been appointed Honorary Physician to the King (and promoted to the rank of brevet-colonel) in succession to Col. J. Healy Spencer O.B.E. whose retirement was announced in THE LANCET last week.

ROYAL ARMY MEDICAL CORPS

MILITARY

Maj. S. R. Armstrong O.B.E. relinquishes his command and retains the rank of Maj.

TERRITORIAL ARMY

Capt. G. L. Pillans M.C. resigns his command and retains his rank.

Lt. W. Bruce, from 6th Bn. Gordons to be Capt.
T. G. Armstrong (late Cadet Felsted Sch. Contingent Div. O.T.C.) to be Lt.

ROYAL AIR FORCE

Flight Lts. W. G. S. Roberts to R.A.F. Station, Dhillban, Iraq; H. E. Bellinger to R.A.F. General Hospital, Iraq; Hinaldi W. J. L. Dean to No. 84 (Bomber) Squadron, Shaibah, Iraq; and G. H. J. Williams to No. 6 Flying Training School, Netheravon.

PUBLIC HEALTH

Domiciliary Service of Midwives in London

On Tuesday the London County Council approved proposals to be submitted to the Minister of Health under the Midwives Act 1936. The Act makes the L.C.C. responsible for providing an adequate service of competent whole-time midwives for a domiciliary service (including maternity nursing). In so doing the Council must have regard to any existing provision made by voluntary or other agencies. These include a large number of voluntary hospitals with medical schools attached to them, voluntary maternity hospitals, and voluntary nursing associations while a certain number of London boroughs have either appointed whole-time salaried midwives or contribute to voluntary bodies engaged in domiciliary midwifery work. Having made suitable arrangements with these voluntary agencies and the borough councils the L.C.C. must supplement their services where necessary by appointing whole-time midwives of its own. With a view to efficiency London has been divided into five areas in each of which provision has been made.

(a) To the fullest possible extent for the existing voluntary agencies.

(b) For those boroughs which already employ whole-time salaried midwives.

(c) For supplementing the existing domiciliary midwives by the addition of a certain number of whole-time salaried midwives to be appointed by the L.C.C.

(d) For linking up the facilities provided by every Metropolitan borough in connexion with the Maternity and Child Welfare Act 1918.

(e) For the provision of hospital accommodation, both municipal and voluntary to whatever extent is necessary.

(f) For the application of a uniform scheme for the payment and collection of contributions by patients in accordance with the scheme.

(g) For the provision of a panel of medical practitioners, to be approved by the L.C.C. who will undertake to be called when required by the patient in their own home.

(h) For the provision of free choice of midwife to the fullest extent possible; and

(i) For the provision of reliefs for holiday duty, sickness duty and for emergencies, wherever and whenever required.

It is proposed that 42 midwives shall be employed directly by the Council and when the arrangements are complete every London mother irrespective of her financial circumstances will be able to call on the service of a fully qualified midwife and will have a choice of midwife. The fees proposed for the attendance of midwives are £2 for first confinements, £1 10s for subsequent confinements, and £1 10s for maternity nursing. Reduced fees will however be charged where the patient or liable relatives are unable to pay the full fees or the whole fee may be remitted.

In a separate report to the Council the hospitals and medical services committee refer to the recovery from patients or liable relatives of fees paid to medical practitioners called in by midwives in emergency and recommend that when the new scheme is brought into operation no charge should be made in respect of the doctor's fees in these cases.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED
JUNE 12TH 1937

Notifications.—The following cases of infectious disease were notified during the week: Small pox 0; scarlet fever 1847; diphtheria 877; enteric fever 10; pneumonia (primary or influenzal) 607; puerperal fever 37; puerperal pyrexia 123; cerebro-spinal fever 26; acute poliomyelitis 8; acute poliomyelitis 1; encephalitis lethargica 4; dysentery 73; ophthalmia neonatorum 10. No case of cholera, plague or typhus fever was notified during the week.

(Continued at foot of next page)

MEDICAL NEWS

University of London

The following have been recognised as teachers in the University and assigned to the faculty of medicine

Mr F O B Butler (surgery London Hospital) Mr A Tudor Edwards (surgery London Hospital) Mr R J Cann (oto rhinolaryngology Guy's Hospital) Mr F W Law (ophthalmology, Guy's Hospital) Mr Pierce Lloyd Williams (dental surgery, St Thomas's Hospital) Dr H Courtney Gage (radiology, St Mary's Hospital) Dr G Roche Lynch (forensic medicine St Mary's Hospital) Dr H T Barron (dermatology, Westminster Hospital) Dr I C Hawksley (medicine University College Hospital) Mr Robin S Pilcher (surgery, University College Hospital) Dr E B Clayton (physical medicine King's College Hospital) Mr Thomas Bedford Ph D (hygiene and public health, London School of Hygiene and Tropical Medicine) Dr Sydney Blackman (radiology, Royal Dental Hospital) Mr F W Edwards (dental metallurgy Royal Dental Hospital) and Dr Janet Vaughan (pathology British Postgraduate Medical School)

The following additional examiners have been appointed

M.D.—Dr William Gunn (hygiene), and Mr N St J G D Buxton (surgery)

D.P.H. (Part II)—Dr William Gunn

Dr A M H Gray and Mr W Girling Ball have been appointed governors of the British Postgraduate Medical School Prof W W Jameson has been elected representative of the University at the Imperial Social Hygiene Congress, and Dr R A Young representative at the twenty third annual conference of the National Association for the Prevention of Tuberculosis

University of Bristol

At recent examinations the following candidates were successful—

FINAL EXAMINATION FOR M.B. CH.B.

Section II—P B Ryan (with second class honours) Daphne V Dennis J P M Forde C R G Howard, Harold James A D Jones, N R Matheson A N H Peach (with distinction in surgery), J W E Snaadon A M Spencer Reginald Tallack and Paul Zimmering

FINAL EXAMINATION FOR L.D.S.

M G Davies J B Inverdale P H S Paine H W Williams, and J G Windmill

Epsom College

The eighty fourth annual general meeting of the governors was held at 49, Bedford square, W.C., on June 18th, 1937, with Lord Leverhulme, the president, in the chair. The results of the last election of a pensioner five foundation scholars, and an annuitant were announced. Lord Leverhulme then referred to the continued increase in the number of boys, and said that in 1936 the average number was 446, of whom 93 were day boys. He also referred to the royal patronage which His Majesty King George VI had graciously consented to extend to the college. The school had attained a fine record in scholarship work—no less than five open scholarships having been secured, one of the boys had won the public school quarter mile at the White City, and one master had gained his rugby cap for England. He drew special attention to the paragraphs in the annual report dealing with tax free subscriptions to charities. He pointed out that if all

the governors would sign the deed of agreement it would mean an increase of from £1500 to £2000 a year for the funds of the Royal Medical Foundation at no cost whatever to the subscriber

The following ten members of the council were re-elected for a further period of three years: Dr J W Carr, Dr Ronald Cove Smith, Mr F S Fleuret, Sir William Hale White, Mrs Robert Hutchinson, Dr Reginald Langdon Down, Dr Arnold Lyndon, Dr Philip Manson Bahr, Mr Arthur Ormond, F.R.C.S., and Mr Julian Taylor, F.R.C.S. Prof John Nixon, and Dr Henry Robinson were elected vice presidents of the college. Colonel Norman C King, Mr H H Rew, and Mr H A Decker were appointed auditors for the ensuing year. The chairman of the college proposed a hearty vote of thanks to all honorary local secretaries, the British Medical Association, the Medical Insurance Agency, the charities committee of the British Medical Association, numerous panel committees, and the editors of the *British Medical Journal* and *The Lancet* for all the work that they had done on behalf of the Foundation.

London and Counties Medical Protection Society

The annual general meeting of the society was held on June 16th at Victory House, Leicester square, W.C., with Sir Cuthbert Wallace, the president, in the chair. The chairman, in proposing the adoption of the annual report, first referred to the death of Dr R L Guthrie. Anyone who worked with Guthrie, he said, was at once attracted to the man, and the society owed him a great debt of gratitude for the work he did as treasurer, in the face of great physical disability. At the chairman's suggestion those present stood in silence as a tribute to Dr Guthrie's memory. Sir Cuthbert continuing, said the society was prospering, for during the past year they had elected well over 1000 new members, the membership standing at over 15,000. The applications for advice and assistance from members received during the year numbered over 1500, and the solicitors had to deal with nearly 800 cases. He thought it was remarkable that there must be still very many members of the medical and dental professions who remain unprotected. During the year they had admitted to membership certain of the dentists who came in under the Act of 1921, which he thought was a very wise proceeding. Having listened to the proceedings in the council and its committees one of the things that had struck him, he said, was the complexity of the modern operation. "As far as I know, legally the surgeon is still responsible for everything that happens at an operation but obviously that position cannot continue indefinitely through the years to come. The responsibility of the anaesthetist with his complicated apparatus and the responsibility of the nurses will have to be recognised in future. The surgeon can no longer go on bearing all the risks involved." The giving of a true certificate might require a great deal of moral courage and to get the true history out of a patient was one of the most difficult things on earth. Nevertheless, he urged those in general practice for their own protection to make correct notes and fill up the patients' cards properly.

Reverting to the happenings of the year he said the society had most wisely made provision for protecting members who had retired. Possibly the most important thing in the whole year was an alteration in the articles of association so that they were able to protect the estate of a deceased practitioner. The wisdom of that decision was shown in a recent action in which for the first time the estate of a deceased doctor was sued, with the final result that £5,000 damages was awarded, the society was able to help the widow to that extent. Finally, Sir Cuthbert said that silence was indeed the golden rule, especially when it is a question of the conduct of a neighbouring practitioner or a colleague in the same town. He urged those who got into trouble to consult the society at once and not to meddle with matters themselves before taking its advice.

Mr W W Mollison spoke on the financial side of the report. For the first time in recent years the balance sheet shows a deficit of £246, largely due to the heavy

(Continued from previous page)

The number of cases in the Infectious Hospitals of the London County Council on June 18th was 2851 which included: Scarlet fever 716, diphtheria 805, measles 116, whooping cough 456, puerperal fever 10 mothers (plus 10 babies), encephalitis lethargica, 282, poliomyelitis, 3. At St Margaret's Hospital there were 25 babies (plus 14 mothers) with ophthalmia neonatorum.

Deaths.—In 123 great towns, including London, there was no death from small-pox, 2 (0) from enteric fever, 0 (0) from measles, 0 (0) from scarlet fever, 17 (3) from whooping cough, 24 (1) from diphtheria, 31 (6) from diarrhoea and enteritis under two years, and 16 (3) from influenza. The figures in parentheses are those for London itself.

Four fatal cases of measles were reported from Birmingham 2 from Leeds. There were 3 deaths from diphtheria at Liverpool and at Wigan.

The number of stillbirths notified during the week was 281 (corresponding to a rate of 38 per 1000 total) including 43 in London.

expenses in the case which the president had mentioned in an analysis of costs per member most of them were an exception for the considerable item of adverse costs and damages which was increased by no less than 7s 7d compared with 1935. The total cost per member worked out at 11s 6d 7d so that they were apparently spending more per member than they received. The difference between the 11s 6d 7d spent and the 11 received, however, was accounted for by interest on investments and accumulated balances. A brochure was to be sent to all members of the profession not members of the society which would show in a more or less readable form the advantages of belonging to a protection society.

Sir Cuthbert Wallace was re-elected president and Dr M. Fegan secretary of the society. Dr Marguerite Kettle was elected to the council.

Mayoian Fellowship

The Association of Surgeons of Great Britain and Ireland invite applications for this fellowship which may be held for one year and is worth £350. Further information will be found in our advertisement columns.

An Ophthalmic Group

A meeting of ophthalmic surgeons and ophthalmic medical practitioners will be held at 3 p.m. on Saturday July 3rd at 17 Russell-square London W.C.1 with the object of constituting a group to protect their status and interests, especially in relation to unqualified prescribing and non-prescribing opticians, and to be organised within or with the approval of the British Medical Association.

Industrial Course

A short intensive course in industrial physiology and industrial psychology will be held at the London School of Hygiene, Keppel-street W.C. from Feb. 18th to 19th. It is designed for members of supervisory staffs in industry but it may also be of interest to industrial medical officers. It will deal with the general principles of industrial health and specific problems arising in industry. Further information may be had from the secretary of the school.

Millbrook Isolation Hospital

A tuberculosis pavilion of 44 beds was opened at the Isolation Hospital Millbrook Southampton on June 10th by Sir Arthur MacNalty. The new building raises the number of tuberculosis hospital cases and the health department can deal with at one time to 140. After the ceremony Sir Arthur said that the town's tuberculosis service was making steady progress and the medical officers' last annual report showed that the mortality-rate from pulmonary tuberculosis was the lowest ever recorded for the borough. It was still however above the average rate for England and Wales. One reason for that was that the town was a seaport and a high proportion of seamen suffered from tuberculosis that had been contracted elsewhere. He was glad to know that in Southampton co-operation between the medical practitioners and the tuberculosis services of the council was extending as was shown by the increase in the calls made upon the tuberculosis officer for consultation.

Order of St John of Jerusalem

The following promotions in and appointments to the venerable Order of the Hospital of St John of Jerusalem have been sanctioned by the King—

As Knight—Nigel Corbet Fletcher M.B. Lt.-Col. Sir James Earl Ennis, M.D. and Gregory Smyth M.D. C.I.E. O.D.E. R.C.S. I.M.S., Arthur Herbert T. Cardew M.C. M.B. F.R.C.S. (M.D. Honnall M.B. Thomas Herbert Goldard M.B. Henry Lindo Ferguson C.M.G. M.D. Eldon Pratt M.D. William Philip Stephens Ward, M.R.C.S. Major Edmund Hamilton Harrison T.D. M.R.C.S. Ernest McIntyre, M.R.C.S. Capt. Alexander Campbell White Knox, M.D. M.B. Charles George M.B. Major John Reith Thomas, M.B. William James M.B. Lt.-Col. Walter Rodney Hatley, M.B. F.R.C.S. As Officer—Major Alfred T. Cresswell-Smith, M.D. Clive Hamilton M.D. M.B. Col. William Brooke Purdon D.S.O. M.B. R.A.M.C. Michael Herbert Watt C.B.E. M.D. Lord Alton of Liverpool M.D. John Blain Thomas, M.D. Col. Frederick Hugh Maguire, M.D. D.S.O. M.D. Paul Lewis M.D. Henry Gill, L.R.C.I. and S. James Ansell Durante, M.D. John Willford Cooper, L.S.A. Capt. Sydney Booth M.B. R.C.S. Col. Philip Henry Mithribhai T.D. M.B. Major Ernest Cameron Wilson M.D. and Sydney Walter M.D.

Middlesex Hospital

The annual dinner of this hospital will be held on Oct. 1st at the Savoy Hotel when Dr Douglas MacAlpine will be in the chair. A refresher course for former students will also be held from Oct. 1st to 3rd.

London Hospital

On Tuesday July 6th at 3 p.m. Sir Kingsley Wood will distribute the prizes to the students at this hospital.

Royal Medical Psychological Association

The annual general meeting of this association will be held at the County Buildings, Ayr on July 7th 8th and 9th under the presidency of Dr Douglas MacRae who will give an inaugural address on the care of the insane. Dr A. Meyer Prof F. L. Golla Dr F. A. Pickworth and Dr A. C. P. Campbell will take part in a symposium on the circulatory system and the psychoses on the second day of the meeting. The last day will be devoted to a discussion of the symptomatology of vascular diseases in the psychoses and mental deficiency. Papers will be read by Dr W. Mayer Gross Dr E. Guttmann Dr A. M. Wylie Dr E. Krapf and Dr I. Macdonald. Dr K. Paddle will also speak on the prophylaxis of dysentery in mental defectives. Further information may be had from Dr W. Gordon Macfield the hon. general secretary, Brentwood Mental Hospital, Essex.

Health Congress at Birmingham

The Royal Sanitary Institute will hold its health congress at Birmingham from July 12th to 17th under the presidency of the Earl of Dudley. The work of the congress is divided into eight sections (preventive medicine engineering architecture and town planning maternity child welfare and school hygiene; veterinary hygiene; national health insurance hygiene in industry tropical hygiene and sewage disposal). There will also be conferences of representatives of local authorities medical officers of health engineers, and surveyors sanitary inspectors and health visitors. As president of the section of preventive medicine Sir Arthur MacNalty will give an address, entitled a Coronation Pageant of the Public Health and Prof J. M. Munro Kerr Dr G. F. Buchan and Dr C. F. S. Flemming will open a discussion on the development of the maternity service. Dr Ernest Ward will preside over the conference of the medical officers of health and Dr P. L. McKinlay Prof R. M. F. Picken and Dr E. R. C. Walker will take part in a symposium on incapacitating sickness. Dr G. P. Crowden will read a paper on the practical application of physiology to hygiene in industry to that section and Dr James Fenton will address the conference of health visitors on the training of the health visitor. A health exhibition has been arranged in connexion with the congress. Further information may be had from the secretary of the institute 90 Buckingham Palace-road London S.W.1.

Appointments

GRUNDY, FRED M.D. Leeds D.P.H. Medical Officer of Health for Luton.

LANIER, F. P. L. M.D., M.R.C.P. Lond. Hon. Assistant Physician to the Royal Free Hospital.

McDONOUGH, JOHN M.B. Glasg., M.R.C.P. Edin., Medical Superintendent of the Perth District Asylum, Perth.

MAYER, G. S. M.B. Camb. F.R.C.S. Eng., Surgical Registrar at the Southend-on-Sea General Hospital.

THOMAS, A. R., B.Sc. Camb., D.M. R.E. Hon. Radiologist to the French Hospital, London.

WALLACE, E. J. G. M.B. Edin., D.P.H., Medical Officer of Health for Weymouth and Melcombe Regis.

COUNCIL OF MIDDLESSEX.—The following appointments have been made—

PONTING, FLEAYSON G., M.R.O.S. Eng. D.P.H. Assistant Medical Officer.

STREETER, LEWIS S. M.B. Glasg., D.P.H. Assistant Medical Officer and

MATTHEWS, O. B., M.R.C.S. Eng. Assistant Medical Officer.

St Thomas's Hospital.—The following appointments are announced—

HENSTON, M. A., M.B. Camb. L.D.S. Assistant Dental Surgeon.

CHITTERTON, W. J., M.B. Liverp., Chemical Pathologist and

KLIN, J. P. M.B. Camb., Assistant Pathologist.

Certifying Paragon under the Factory and Workshop Acts Dr H. FALLOWS (Redcar District, Yorkshire North Riding) and Dr J. C. BRYNE (Lewer District, Wiltshire).

Vacancies

For further information refer to the advertisement columns

Albert Dock Hosp Connaught road E—Res M O £110
 Ashford Hosp, Kent—R M O, £150
 Ashton-under-Lyne District Infirmary—H S at rate of £150
 Also Cas H S, £180
 Association of Surgeons of Great Britain and Ireland—Moynihan Fellowship £350
 Barnsley, Beckett Hosp and Dispensary—Jun HS and H P each £200
 Bath, Royal United Hosp—H P at rate of £250 Also two H S s each £150
 Birmingham, Queen's Hosp—Res Anaesthetist, £70-£100
 Bolingbroke Hosp Wandsworth Common S W—H P at rate of £120
 Bolton Townley Hosp Farnworth—Asst M O £225
 Bradford Royal Eye and Ear Hospital—Two H S s each £180
 Brighton New Hosp for Women—H S at rate of £100
 Brighton Royal Sussex County Hosp—Cas H S, £120
 Bury Infirmary, Lancs—Res Surg O £300
 Buxton, Devonshire Royal Hosp—H P at rate of £175
 Camberwell Metropolitan Borough—Tuber O and Deputy M O H, £750
 Cambridge, Addenbrooke's Hosp—Res Anaesthetist and Emergency O at rate of £130
 Cardiff King Edward VII Welsh National Memorial Association Res Asst Tuber M O, £500
 Carlisle, Cumberland Infirmary—H S, at rate of £155
 Charing Cross Hosp W C—Hon Orthopaedic Surgeon Also Hon Clin Asst to X Ray and Electrotherapeutics Dept
 Chesterfield and North Derbyshire Royal Hosp—H S, at rate of £150
 Chichester Royal West Sussex Hosp—Jun HS £125
 Croydon County Borough—Asst. M O H &c, £500
 Deronport Prince of Wales's Hosp—Jun HS at rate of £120
 Durham County Mental Hosp—Locum Tenens Asst M O, 1 guinea per day
 Eastbourne Royal Eye Hosp, Pevensey road—H S, £100
 Gloucestershire Royal Infirmary and Eye Institution—H S and H P each at rate of £150
 Guildford, Royal Surrey County Hosp—H S, at rate of £150
 Halifax, Royal Infirmary—First H S at rate of £200
 Hereford County Hosp—H S at rate of £180
 Hosp for Consumption and Diseases of Chest Brompton S W—H P and H P for Sanatorium Frimley, each £50
 Hosp for Sick Children Great Ormond street, W C—Res M O for Country Branch at rate of £200
 Hosp for Tropical Diseases, Gordon street W C—Res Med Supt, £400 Also Ophth Surg
 Hospital of St John and St Elizabeth 60 Grove End road N W—Res H P at rate of £100
 Huddersfield St Luke's Hosp—Res M O, £230
 Hull, Beyerley road Institution—Asst M O s £350
 Ilford Borough—Two Asst M O H s £500 and £400
 Ilford King George Hosp—Two H S s, each £100
 Ipswich, East Suffolk and Ipswich Hosp—Cas O H S to Orthopaedic and Fracture Dept and H S to General Surgeon and Genito Urinary Surgeon, each £144
 Kedgeley and District Victoria Hosp—Res M O, at rate of £180
 Keilerning and District General Hosp—H S and H P at rate of £175 and £150 respectively
 King's College Hosp Denmark hill S E—Asst Neurologist.
 Knorle Mental Hosp Fareham Hants—Jun Asst M O, £350
 Leeds Killingbeck Sanatorium—Asst. Res M O, £250
 Liverpool Assoc Football Club—M O
 London Chest Hosp Victoria Park E—Asst Tuberculosis O, £600
 London County Council Consultant and Specialist Services—Part time Consulting Dermatologist £125
 London County Council—Temporary Dist M O for Hampstead Also Sen Asst M O s Grade II £500 and Asst M O s Grade I £350
 London University—Examinerships.
 Louth and District Hosp—Hon Consulting Orthopaedic Surgeon Also Hon Consulting Physician
 Manchester, Ancoats Hosp—H S to Ear Nose and Throat Dept at rate of £100
 Manchester City Crumppall Pathological Laboratory—Asst Pathologist £500
 Manchester Ear Hosp, Grosvenor-square—Res H S £120
 Manchester Northern Hosp—Res Surg O £150 Also Res H P and Res H S each at rate of £100
 Manchester Royal Children's Hosp, Pendlebury—Res M O and Res H S, at rate of £150 and £100 respectively
 Manchester Withington Hosp—Res Asst M O at rate of £200
 Marie Curie Hosp 2 Fitzjohn's-avenue N W—Asst Director from £500
 Middlesbrough North Riding Infirmary—Sen H S and Third H S at rate of £175 and £140 respectively
 Middlesbrough County Council—Sen Dental Officer £700 Also Visiting Dental Surg 2 guineas per session
 Mogden Peter Hosp Isleworth—Asst Res M O £250
 Newcastle upon Tyne Hosp for Sick Children—H P and H S each at rate of £100
 Newcastle upon Tyne Royal Victoria Infirmary—Asst Radium Officer £350
 Northampton County Borough Education Committee—Asst School Dentist £400
 Norwich Infirmary—Res Asst M O £350
 Norwich, Norfolk and Norwich Hosp—Gen H S H S to Orthopaedic Dept and Cas O each £120
 nham General Hosp—Res Cas O and H S to Ear Nose, Throat Dept each at rate of £150

Oldham Municipal Hosp—Res Asst M O, at rate of
 Oxford Radcliffe Infirmary—Res M O for the Osler
 Headington at rate of £120
 Plymouth Prince of Wales's Hosp—H S and H P, £120
 Port of Spain City Council—M O H £800
 Portsmouth City Mental Hosp—Locum Tenens 1 guinea weekly
 Queen Mary's Hosp for the East End Stratford E—Out-patient O, at rate of £150 Also Anaesthetist
 Queen's Hosp for Children Hackney road, E—A Visiting Anaesthetist 1 guinea per attendance
 Rotherham Hosp—H S for Ophth and Ear, Nose, and Depts £150
 Royal Free Hosp Gray's Inn road, W C—In patient Asst.
 Royal London Ophthalmic Hosp, City road E C—A Also Out patient Officer, £100
 Royal Masonic Hosp Renscourt Park W—Two M O s, each at rate of £250
 Royal National Orthopaedic Hosp—Two H S's for Branch each at rate of £150
 Russell Hosp near Wickford Essex—Research Res £800
 St John's Hosp, Lewisham S E—H S at rate of £250
 Salford Hope Hosp—Asst Res M O, at rate of £250
 Salisbury General Infirmary—Res M O, £250
 Sheffield Children's Hosp—H S £100
 Sheffield Royal Hosp—Clin Asst to Ophthalmic Dept
 Sheffield Royal Infirmary—H S and Aural H S, each of £80 Ophth H S, at rate of £120 Also Cas O of £150
 Shrewsbury, Royal Salop Infirmary—Res H S, at rate of £150
 Smethwick, County Borough—Sen Asst M O H, £350 Also Asst M O H &c, £350
 Southampton, Royal South Hants and Southampton Cas O and Res Anaesthetist and H S to Ear Throat Dept, each at rate of £180
 South London Hosp for Women Clapham Common—Two H S's each at rate of £100
 Staffordshire Mental Hosp—Res Asst M O, £550
 Stoke on Trent Longton Hosp—H S, £160
 Swansea General and Eye Hosp—H S at rate of £110
 Tisbury Hosp Essex—H S at rate of £140
 Tunbridge Wells Kent and Sussex Hosp—H S, £150
 Victoria Hosp for Children, Chelsea S W—H P and S at rate of £100
 West End Hosp for Nervous Diseases, Gloucester Res H P s each at rate of £125 Also Hon. Med. logist and Hon Clin Asst
 West Ham Mental Hosp Goodmayes—Jun Asst M O
 West London Hosp Hammersmith road, W—Non Res £250
 West Middlesex County Hosp Isleworth—Surgeon, £1000 Also Asst Pathologist, £650
 Woking and District Victoria Hosp—Res M O, £120
 Workson, Victoria Hosp—Jun Res at rate of £150
 The Chief Inspector of Factories announces a vaca Certifying Factory Surgeon at Shelf York (Riding)

Births, Marriages, and Deaths

BIRTHS

GRAVES—On June 13th at Devonshire street London Mrs K A H Graves M D wife of Mr T F R C S—a son
 HALLIWELL—On June 16th at Jersey, the wife of Halliwell F R C S, of a son
 ODBERT—On June 10th at Louise Margaret Hospital, the wife of Captain A N B Odbert, R A, daughter

MARRIAGES

GILBERT—HORNSBY WRIGHT—On June 12th at Westernham, James Gordon Anderson Gilbert to Susannah Margaret only child of Mr and Mrs Hornsby Wright of Westernham.
 WHIGHAM—CHRISTOPHERSEN—On June 10th, at R M Whigham, M O M S F R C S, W M C to Hildegard only daughter of Mr J Christ of Lyngør Norway

DEATHS

LAST SMITH—On June 13th at Torquay Edward J P I R C P Edin
 MACKINNON—On June 10th at St Thomas's Hospital Murdoch Mackinnon M D Edin D P H of East ham and formerly of Nairobi Kenya Colony
 SWORDER—On June 18th at Guildford, Hants L S A M R C S Eng aged 83

N B—A fee of 1s 6d is charged for the insertion of Births Marriages and Deaths

LORD MAYOR TRELOAR CRIPPLES' HOSPITAL
 The Duke of Kent, on June 10th, visited to open the Silver Jubilee treatment centre. He completes the rebuilding of the hospital which eight years ago

NOTES, COMMENTS AND ABSTRACTS

HISTORY OF NITROUS OXIDE AND ETHER

from from the *Evening Standard* of June 17th patient in an hospital at Baltimore, Maryland, died by an explosion in his lungs during an operation for a carbuncle on his neck. The account states: "The anæsthetic, a form of gas, had just been administered when there was an explosion which immediately killed instantly. Two nurses at the operation received slight injuries from the electric cautery machine which was being used at the time. The operation is thought to have caused the explosion. The operating surgeon who escaped unscathed afterwards: The gases in anæsthetic are oxygen, nitrous oxide and ether are not explosive. We use them in conjunction every thousands of times a year. It was just these unexplainable accidents that happen." The issue of March 6th last (p. 578) we recalled that Prof H B Dixon drew special attention to the recognised explosibility of mixtures in which nitrous oxide is replaced by nitrous oxide in conjunction with ether or other inflammable gases and also to the work of Mr J H Coste and Dr C A Blandy undertaken for the London County Council and published in the *British Journal of Anaesthesia* in which they say: "Nitrous oxide is endothermic and it has been found that when detonated it decomposes with violence into nitrogen and oxygen. The experiment illustrates the danger of diathermy. This conclusion was confirmed after experiments in which a mixture of 75 per cent. of ether shattered the explosion vessel. They also obtained a shattering explosion of ether and oxygen from a Boyle's apparatus. It is probable that the heat liberated on thermal decomposition of the nitrous oxide adds greatly to the violence of the other explosion. These facts cannot be unknown to surgeons."

THE HISTORY OF CONTRACEPTION

Mr Himes has devoted himself for the last decade to a study of the historical aspects and social aspects of contraception. The subject matter of his articles and papers has now been brought into a series of volumes which if we may judge from the first can justly be described as encyclopaedic. They are told by Sir Humphry Rolleston who writes a preface that this volume is to be followed by two others which will deal respectively with the social and economic aspects of contraception and with the relation of birth control to the fundamental aspects of modern population. These aspects of the question are actually dealt with by Mr Himes in no cursory spirit in the first volume concluding part of the volume under the title "The five preceding parts thoroughly fulfil the expectations raised by the title. The first deals with contraceptive technique before the dawn of history and is based on the reports of social historians. The second with the methods of birth control in the period of antiquity of the Western world; the third describes the practices of birth control in the ancient world; the fourth, the practices of birth control in the Middle Ages and early modern times; the fifth, the history of birth control in the United States and in the sixteenth century; and the sixth, the history of birth control in the United States and in the sixteenth century. The author sets out what he believes to be the history of the process of demoralisation which has brought about by a knowledge of chemistry and biology, and by the vulcanisation of rubber, the history of birth control. Mr Himes has drawn attention to

those writers whose prescriptions have a scientific basis of common sense rather than of superstition and magic; and the first of these writers in merit is deemed to be Soranos to whom the book is dedicated. Soranos pointed out that soft wool introduced into the mouth of the womb before coitus reduced the chances of conception and he named several astringent substances which would probably exert a spermicidal effect. Contrast the recommendations of Soranos with the following prescription of an Islamic writer: "If a woman urinates on the urine of a wolf she will never be with child; and with the intravaginal use of Casanova of gold balls for which he paid about 27 apiece."

The work is illustrated by reproductions of original Islamic texts, facsimiles of Francis Place's celebrated contraceptive handbills and in the later chapters by numerous figures, tables and charts. It is not a book to read from cover to cover but as a work of reference it occupies a unique place in medico-social literature.

SPURIOUS CHLORODYNE

A PRACTICE which is said to be spreading in the North of England especially in the industrial areas is the sale of substitutes for chlorodyne (tincture of chloroform and morphine) which differ in important respects from that compounded from the recognised formula. Since the genuine preparation contains morphine hydrochloride it can only be sold by registered pharmacists but the substitutes may be sold by any shopkeeper or at a stall in the market place. The sale of the spurious article as chlorodyne or chlorodyne substitute is to be strongly deprecated for more reasons than one, but the most important reason is the danger which the practice entails. The purchaser of the morphine-free product may take large doses of it without doing himself damage but being unaware that a subsequent supply of the medicine which he buys at a pharmacy is an entirely different and a potent preparation he will not know that it is unsafe to take the same large dose from the new bottle as he took from the old one. The risk is one that the purchaser should know how to avoid and if substitutes for chlorodyne are to be sold they should be sold under an entirely different name. It is an offence under the Food and Drugs (Adulteration) Act for a shopkeeper to sell to a person requiring true chlorodyne an article which is not true chlorodyne and it may be that the appropriate authority will take action to check the practice.

A POCKET VALVE AMPLIFIER HEARING AID

The Multitone Electric Company of 92 New Cavendish-street W 1 have produced a valve-amplifier hearing aid which can be worn on the person with comfort and efficiency and which obviates the necessity of carrying a case of the size of a small box camera. The new model the V.P.M. or Vest Pocket Multitone achieves this result by separating the various components, which are carried in different pockets and has the advantage that the receiver may be placed in the best position for collecting sound. Once the components are bestowed the apparatus is invisible except for the head phones, but it may be assembled in a case or in a lady's handbag if preferred. The apparatus comprises a crystal microphone to be clipped to the coat or waistcoat; a three-valve amplifier which is small enough to fit easily into a waistcoat pocket and which should be placed in some such accessible position for it incorporates the switch and the volume control; a 37½ volt high tension battery in a thin morocco case and of a flexible type for more comfortable wearing; and a 6-volt low tension dry battery. There is no variable tone control but models with different tonal responses are available to suit various forms of deafness and individuals

are tested by audiometer and amplification meter before the instrument is supplied. The Multitone "unmasked hearing" telephones are used, a method which employs two headphones in one of which intended for use in the better ear, the lower tones are completely eliminated, it is claimed that this gives better definition of speech, and that the absence of the masking effect of low tones results in gradual improvement of the hearing. The price of the instrument, including the double headphones as well as a small single earpiece for occasions when as inconspicuous an aid as possible is desired, is eighteen guineas, the high-tension battery may be expected to last for two to three months and costs 5s 6d, the low-tension batteries last about a week and cost 1s, or a battery of twice this capacity can be obtained for 1s 3d by those who do not mind the extra weight. The makers very properly allow a trial hire for seven days at a charge of 10s 6d. Since valve-aids undoubtedly give a far better and less distorted amplification of sound than other types of electric amplifier, a model which can be worn on the person will supply a want, and the instrument here described is efficient and well made.

THE FUTURE OF SEX RELATIONSHIPS

IN the future, according to Mr de Pomerai,¹ sex relationships will be purged of the elements of jealousy and of clumsiness by which they are stultified to-day. Extra-marital relationships will be permitted, but they must not detract from the affection, companionship, and financial benefits which should be enjoyed by the legitimate partner, and they will take their place in a psychological, social, and philosophical adjustment which we shall learn by following the Aristotelian principle of the Golden Mean and by adopting a pantheistic attitude to the ultimate problems of life. This formulation does not appear to be the product of a first hand experience of the sexual problems of others such as might be gained by a physician, it seems rather to have been evolved from reading the works of modern popularisers of science. The names of Wells, Huxley, Jeans, Russell, and Joad appear with a chilling frequency and the reader is finally presented, on the last page, with a picture which some will find agreeable of a Utopia which the author believes will be realised—but long after his own lifetime.

AGRANULOCYTOSIS AND AMIDOPYRINE

It appears that the risk of producing agranulocytosis by giving amidopyrine is still insufficiently appreciated. Writing in the *Nederlandsch Tijdschrift voor Geneeskunde* (1937, 81, 2328), E. Gorter describes a case in which a boy, five years old, was admitted to hospital in October, 1936, with profound anaemia, fever, and enlargement of the spleen.

He had previously had a long series of illnesses, acute otitis media a year before had been followed by recurrent attacks of bronchitis, lymphadenitis, and an undiagnosed infection clinically resembling osteomyelitis. At the beginning of the year during July, and again during September, amidopyrine had been given by the family doctor. A blood examination showed a hæmoglobin content of 33, erythrocytes 1½ millions, and leucocytes 150 per c mm. The differential white-cell count showed 50 per cent of lymphocytes. A blood transfusion of 200 c cm was given and a course of Pentnucleotide begun. A second blood examination, four days later showed hæmoglobin 44 per cent, erythrocytes 1 640 000, and leucocytes 930 per c mm, the child was more lively and its appetite was improved but œdema of the legs was noted. Further transfusions were followed by progressive improvement in the blood picture. Progress was interrupted by the development of an empyema from which he made a good recovery. He was sent home at the end of December with a leucocyte count of 3700 per c mm. Soon afterwards however he developed acute tonsillitis and the leucocyte count fell to 1900 (lymphocytes 96 per

cent), and despite another blood transfusion he died within a few days.

During his illness this boy received no drug except amidopyrine, and Gorter believes that it must be held responsible for the agranulocytosis.

GAS AND BACTERIAL WARFARE

IT is doubtful whether one can further the cause of peace by making the blood curdle over the preparations being made by the Great Powers for gas and bacterial warfare. This is the object of the aim of a work¹ whose terrible theme gains nothing from the somewhat uncritical and emotional approach nor from the large amount of interesting but irrelevant padding, nor are the arguments in favour of the successful use of bacteria in war convincing. At the same time some startling revelations are given of which perhaps the most interesting is of enormous imports of arsenic into Germany as a presumed object. Of the invention of gas the author puts even Macaulay's famous school to shame with the statement that the name of Dr Berthold Schwarz has been taught to "every throughout the world."

Medical Diary

Information to be included in this column should be in proper form on Tuesday, and cannot appear if it is later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street

TUESDAY, June 29th
Psychiatry 8.30 P.M. Annual General Meeting
Erich Wittkower The Influences of the Emotions on Bodily Function

WEDNESDAY

Comparative Medicine 4 for 4.30 P.M. (National Institute for Medical Research Farm Laboratories, N.W.)
1 Dr C. H. Andrews Dr Stuart and Dr Wilson Smith Current Investigations on Influenza 2 Mr A. S. Parkes F.R.S. and Mr Emmens Endocrine Studies in Poultry
Wilson Smith The Technique of Faggot for Virus Culture 4 Miss E. Salmon The Role of Day-old Chicks

NATIONAL ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS

THURSDAY July 1st, FRIDAY and SATURDAY—Conference at Bristol

LECTURES, ADDRESSES, DEMONSTRATIONS,

BRITISH POSTGRADUATE MEDICAL SCHOOL, 1, road W

TUESDAY June 29th—4.30 P.M., Dr D. Hunter, Infectious Diseases

WEDNESDAY—Noon, clinical and pathological conference (medical) 2 P.M., Dr Belt Pathology of Infectious Diseases 3 P.M., clinical and pathological conference (surgical)

THURSDAY, July 1st—2.15 P.M. Dr Duncan Radiological Demonstration 3 P.M., Obstetrics

FRIDAY—3 P.M., clinical and pathological conference (obstetrics and gynaecology)

Daily, 10 A.M. to 4 P.M. medical clinics, surgery and operations, obstetrical and gynaecological and operations

FELLOWSHIP OF MEDICINE AND POSTGRADUATE MEDICAL ASSOCIATION 1, Wimpole-street W

MONDAY June 28th, to SUNDAY July 4th—West London Hospital for Nervous Diseases, Welbeck-street W

Afternoon M.R.C.P. course in Nervous Diseases Sat and Sun week-end course in Chest Hospital, Victoria Park E and Fri 6 P.M. M.R.C.P. course in Heart and Lung diseases Sat and Sun week-end course in Chest Hospital 3 P.M. twice weekly M.R.C.P. course in Chest—Preston Hall, near Malpas, Shropshire. Tuberculosis demonstrations for M.R.C.P. and Open only to members of the fellowship

HOSPITAL FOR SICK CHILDREN, Great Ormond-street W.C.

THURSDAY July 1st—2 P.M. Dr R. S. Brown 3 P.M. Dr W. W. Payne Control of Obesity Out-patient clinics daily at 10 A.M. and ward P.M.

SOUTH WEST LONDON POSTGRADUATE ASSOCIATION TUESDAY June 29th—4 P.M. (St James' Hospital, road SW) Mr J. P. Monkhouse Hearing

¹ The Future of Sex Relationships. By Ralph de Pomerai.

Paul, Pp. 132, 3s 6d.

¹ Death From the Skies. By Heinz Liepmann, Martin, Seeger, and Warburg. Pp. 286, 6s.

